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STUDY OF FEEDING PRACTICES IN CHILDREN WITH SEVERE ACUTE MALNUTRITION (SAM) OF MUMBAI, MAHARASHTRA AGED 9 – 24 MONTHS

Pediatrics

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ABSTRACT

BACKGROUND: Malnutrition is a public health concern in India. Suboptimal feeding practices reflect the development of severe acute malnutrition in children. The purpose of the study was to determine the feeding practices in children with severe acute malnutrition (SAM) aged 9 – 24 months.

METHODS: A cross-sectional study was conducted in the Nutrition Rehabilitation Research and Training Centre (NRRTC) in Mumbai, Maharashtra including children aged 9 – 24 months. Children were included in the study as per WHO classification of severe acute malnutrition. The information on anthropometric measurements and feeding practices were recorded in a structured questionnaire. Correlation between the feeding practices and anthropometry was examined. Descriptive and bivariate analysis was carried out.

RESULTS: 84% of SAM children were found to be severely underweight and 52 % were severely stunted. Only 40% of children were exclusively breastfed. The introduction of complementary feeds at 6 months of age was practiced in 25% of children. 44 % of children were introduced to semi-solid feeds beyond six months of age. Minimum Dietary Diversity was adequate in only 28% of SAM children. There was the least consumption of vitamins and iron-rich food groups among the SAM children.

CONCLUSION: Improving maternal awareness about child feeding practices which are preventable risk factors is a key for reducing the burden of severe acute malnutrition.

KEYWORDS

Severe Acute Malnutrition, Complementary Feeding, Breastfeeding, Minimum Dietary Diversity

INTRODUCTION

Malnutrition is a public health concern in India. The Fourth National Family Health Survey (NFHS-4) data has revealed that trends of underweight and stunting for children below five years of age have dropped down but unfortunately, there is a hike in wasting prevalence in the last decade. The report states that the incidence of wasting in children has increased immensely in Maharashtra and reached 26% of children below five years of age. The prevalence of severe acute malnutrition in children less than five years of age in Maharashtra is 9% [1]. If the status of undernutrition among children in the country remains stagnant then it may deteriorate their survival rates, health conditions, and future adult productivity.

There is a link between undernutrition and infant and child feeding practices. Poor breastfeeding practices and inadequate complementary feeding among children have led to the development of undernutrition in the early phase of life which is one of the leading factors of child mortality [2]. Studies have revealed that inappropriate feeding practices in the first 1000 days can have a crucial impact on the child's cognitive and social development and rapid growth [3,4].

Breastmilk with its enhancing factors has overpowered the efficacy of animal milk and has proven to protect against infectious diseases and reduce mortality rates among children and infants. The beneficial effects of breastfeeding are highly dependent on performing proper breastfeeding practices. Complementary feeding is necessary after six months as human milk alone is not sufficient to meet the nutritional requirements of a growing child [5]. It is recommended globally that a child should be exclusively breastfed for the first six months followed by the initiation of semi-solid foods. Also, breastfeeding should be continued till two years along with complementary feeding. Despite this, after six months of life, the child should be subjected to adequate dietary diversity to curtail the deterioration of the child's nutritional status [3]. Thus, the need for studying feeding practices is imperative for the prevention of severe acute malnutrition.

The aim and objective of the study were to determine the breastfeeding and complementary feeding practices in SAM children, to correlate the feeding practices with the nutritional status of SAM children aged 9 – 24 months.

MATERIAL AND METHODS

A cross-sectional study was conducted in the Out-patient Department of Nutrition Rehabilitation Research and Training Centre (NRRTC) in Mumbai, Maharashtra including children aged 9 – 24 months. A total number of 25 children newly diagnosed with severe acute malnutrition (SAM) aged 9 – 24 months from 11th February 2020 to 14th March 2020 were selected for the study.

INCLUSION CRITERIA:

Children within the age group of 9 to 24 months on admission and fulfilling any one of the following WHO diagnostic criteria of severe acute malnutrition were included in the study:

- Weight for height z score (WHZ) < - 3 SD.
- Mid upper arm circumference (MUAC) <11.5 cm.
- Presence of bilateral pitting edema of nutrition origin or severe visible wasting

EXCLUSION CRITERIA:

Children with non–nutritional causes of severe acute malnutrition (SAM) such as cerebral palsy, malabsorption, chronic system diseases, thalassemia, heart diseases, congenital malformations were excluded from the study.

The study was conducted after the approval from Inter System Biomedical Ethics Committee (ISBEC). Informed consent was obtained from the mothers of the children before enrolment in the study.

METHODS:

A structured questionnaire was used to obtain information including the following:

- **Anthropometric measurements and indices-** The weight, length, mid-upper arm circumference, and Z scores were obtained using uniform measuring tools from the assigned nurse at NRRTC
- **Feeding practices-** breastfeeding status, duration of exclusive breastfeeding, the inclusion of top feeds, use of the bottle, time of initiation of complementary feeding, minimum dietary diversity

(proportion of children who receive foods from four or more food groups out of seven food groups in the last 24 hours: (i) cereals, legumes (ii) pulses and nuts (iii) milk and milk products (iv) meat, poultry (v) eggs (vi) vitamin A-rich fruits and vegetables; and (vii) other vegetables).

STATISTICALANALYSIS

Data were analyzed using SPSS software (version 25). A descriptive analysis was used for all variables. Pearson Correlation was used to explore significant correlations of feeding practices with anthropometry.

RESULTS

The study sample consisted of 25 children with severe acute malnutrition. The mean age of the study sample was 14.96 months. Of 25 children, 68% belonged to the 12 to 24 months of age group whereas the remaining 32% were 9 to 11 months of age. In this study, the male-female ratio was 1:1.1.

Anthropometric measurements and indices:

The mean weight and height of SAM children were 6.30 ± 1.09 cm and 69.45 ± 6.12 cm respectively. The mean MUAC of all SAM children was 11.1 ± 0.7 cm ranging from 8.5 cm to 12.2 cm. 56% (n=14) had MUAC <11.5 cm. 88 % (n=22) children had WLZ score of < - 3SD. Apart from this, 52% (n=13) and 84% (n=22) were also reported with severe underweight and severe stunting respectively.

Feeding Practices:

Table 1: Feeding practices

Variables of feeding practices	N (%)
Duration of exclusive breastfeeding	
6 months	10 (40)
Before 6 months	9 (36)
Beyond 6 months	3 (12)
Never breastfed	3 (12)
Initiation of complementary feeding	
At 6th month	7 (28)
Early	7 (28)
Late	11 (44)
Inclusion of Top feeds	7 (28)
Use of bottle	7 (28)
Breastfed	15 (60)
Minimum dietary diversity score	
0 – 2 food groups	6 (24)
3 food groups	12 (48)
>= 4 food groups	7 (28)

The mean duration of exclusive breastfeeding (EBF) was 4.76 ± 2.17 months. All SAM children were introduced to complementary feeding (CF) at an average age of 5.84 ± 2.13 months. The top feeds were given to these children in the form of infant formulas (n=4), cow's milk (n=2), and water (n=1). The minimum dietary diversity (MDD) was adequate only in 28% SAM children. Among the seven food groups of MDD, the majority of SAM children consumed cereals (92 %), pulses (96 %), and dairy products (80%) in the past 24 hours. The least number of children consume eggs, flesh foods, and other fruits and vegetables. There was no consumption of vitamin A-rich fruits and vegetables among these children.

Table 2: Correlation between feeding practices and anthropometry

Anthropometric measurements and indices	Duration of EBF (in months)	Time of initiation of CF (in months)
Weight (kg)	0.168	0.057
Length (cm)	-0.030	-0.147
MUAC (cm)	**0.460***	0.590**
WAZ z score (SD)	0.046	-0.028
LAZ z score (SD)	0.321	0.247
WLZ z score (SD)	**0.470***	**0.442***

**. Correlation is significant at 0.01 level (2 – tailed)

*. Correlation is significant at 0.05 level (2 – tailed)

Correlation between duration of exclusive breastfeeding (EBF) and MUAC and weight for length z score (WLZ) was found to be significant (p <0.05). A positive significant correlation between the time of initiation of complementary feeding (CF) and WLZ z score was noted (p = 0.02).

DISCUSSION

25 SAM children were included in the study. Lack of exclusive breastfeeding is a significant factor for the development of severe acute malnutrition in children [6,7]. In the present study, 60% of children were not exclusively breastfed according to global recommendations. Similar findings were reported by Madhusudhan et. al. Gajare et. al found a lower percentage of SAM children (54.2%) who were not exclusively breastfed [8]. Early or late introduction of complementary feeds can lead to malnutrition [9,10]. The present study manifests, inappropriate timely initiation of complementary feeding as 44% SAM children were introduced to CF beyond six months of age. However, Gajare et al. stated a much higher percentage of SAM children (52.7 %) who were proposed to complementary feeding at an early age [8]. In the present study, only 28% of children met the minimum dietary diversity. However, the data from various studies of India shows that MDD varies from 21 – 22 % [11]. Malnutrition may be attributed to poor food diversification of complementary feeds [9]. In our study, the minimum dietary diversity (MDD) suggested that the tendency to feed cereals, legumes, and milk was high with the least emphasis on iron and vitamin-rich food groups and suggests improper food diversification.

The significant correlation of EBF with WLZ z score and MUAC suggests that a smaller duration of exclusive breastfeeding than the recommendations (6 months) can deteriorate the WLZ z scores and MUAC measurements. However, in a study done by Gadappa et. al, they did not find any correlation between the duration of EBF and malnutrition. We found a significant correlation between time of initiation of CF and WLZ z score which suggests that timely initiation of complementary feeding can improve the WLZ z scores of children. Earlier findings have also reported that the age of initiation of complementary feeding is correlated with malnutrition [9,10]. The limitation of the study is the small sample size and the study duration.

CONCLUSION

Improving the knowledge of child feeding practices among mothers can reduce the burden of severe acute malnutrition.

REFERENCES

1. IIPS (International Institute for Population Sciences). National Family Health Survey 4, 2015-2016. India. Mumbai. International Institute of Population Sciences; 2016.
2. Gakidou, E, Afshin A, Abajobir A, et al. (2017). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2016: A systematic analysis for the Global Burden of Disease Study 2016. The Lancet, 390(10100), 1345–1422. https://doi.org/10.1016/ S0140-6736(17)32366-8
3. Black RE, Allen LH, Bhutta ZA, de Onis M, Ezzati M, Mathers C, et al. (2008) Maternal and child undernutrition: global and regional exposures and health consequences. The Lancet, 371(9608), (243–260). https://doi.org/10.1016/S0140-6736(07)61690-0
4. Bhutta, ZA, Das JK, Bahl R, Lawn JE, Salam R, Paul VK et al. (2014). Can available interventions end preventable deaths in mothers, new born babies, and stillbirths, and at what cost? The Lancet, 384 (9940), 347–370, https://doi.org/10.1016/S0140-6736(14)60792-3
5. WHO. (2008). Maternal and new born nutrition and health, 7. Retrieved from: http://origin.who.int/maternal_child_adolescent/events/2008/mdg5/nutrition.pdf
6. Mishra K, Kumar P, Basu S et al. (2014). Risk factors for severe acute malnutrition in children below 5 y of age in India: A case-control study. Indian Journal of Pediatrics, 81(8), 762–765. https://doi.org/10.1007/s12098-013-1127-3
7. Madhusudhan, K. et al (2017). Study of risk factors of severe acute malnutrition (SAM) in children 6 months to 5 years of age and evaluation of effect of micronutrient supplementation (WHO protocol) on serum zinc and magnesium levels: a case control study. International Journal of Contemporary Pediatrics, 4(4), 1198. https:// doi.org/10.18203/2349-3291.ijcp20172112
8. Gajare U, Mundada S & Singh S (2017). Feeding practices and immunization status among children with severe acute malnutrition: Findings of a single center observational study. MedPulse International Journal of Pediatrics, 4(2), 24–27. https://doi.org/ 10.26611/1014423
9. Gadappa SM., & Behera MK. (2016). Nutritional Status and Feeding Practices in Relation to IYCN Policy Among Children under 2 Years of Age in Tertiary Care Centre. Original Research, 3(6), 1650–1652.
10. Rasania S & Sachdev T. (2001). Nutritional status and feeding practices of children attending MCH Centre. Indian Journal of Community Medicine, 26(3).
11. Ministry of Health and Family Wealth (MoHFW), Government of India, & UNICEF and Population Council. (2019). Comprehensive national nutrition survey (CNNS)2016-2018 National Report.