

Assessment Of Infant And Young Child Feeding Practices Among Children With Acute Malnutrition: A Cross-Sectional Study At A Tertiary Care Nutritional Rehabilitation Centre In South India

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ABSTRACT

Background: Malnutrition remains a major public health problem among children under five years of age, with inappropriate infant and young child feeding (IYCF) practices being one of its leading contributors. Assessing these practices is essential for developing effective nutritional interventions and improving child health outcomes.

Aim/Objectives: To assess infant and young child feeding practices among children admitted to the Nutritional Rehabilitation Centre (NRC) with acute malnutrition at a tertiary care Medical College Hospital in South India.

Materials and Methods: A hospital-based cross-sectional study was conducted over a period of six months among 80 children with acute malnutrition aged 6–59 months admitted to the NRC at a tertiary care Medical College Hospital in South India. Information regarding breastfeeding and complementary feeding practices was collected from caregivers using a structured questionnaire. Anthropometric measurements were recorded, and the data were analyzed using descriptive statistics.

Results: Among the participants, 40(50%) had severe acute malnutrition and 40(50%) had moderate acute malnutrition. Exclusive breastfeeding was reported in 37(46.3%), timely complementary feeding in 50(62.5%), minimum dietary diversity in 28(35.0%), and minimum acceptable diet in 20(25.0%) of children. The mean weight-for-height Z score was -2.99 ± 0.74 , while the mean MUAC was 11.14 ± 0.68 cm, indicating significant acute malnutrition.

Conclusion: Suboptimal IYCF practices, particularly inadequate exclusive breastfeeding and poor complementary feeding quality, were common among malnourished children. Strengthening caregiver education and promoting recommended IYCF practices may help reduce childhood malnutrition and improve nutritional outcomes.

Keywords: Infant and Young Child Feeding, Malnutrition, Nutritional Rehabilitation Centre, Exclusive Breastfeeding, Complementary Feeding, Severe Acute Malnutrition.

INTRODUCTION

Infant and young child feeding (IYCF) practices play a pivotal role in ensuring optimal growth, development, and survival during the first two years of life, a period often referred to as the "critical window of opportunity." Appropriate feeding practices, including initiation of breastfeeding within one hour of birth, exclusive breastfeeding for the first six months, timely introduction of complementary foods at six months, and continued breastfeeding up to two years or beyond, are essential for preventing malnutrition and reducing childhood morbidity and mortality [1]. Despite global efforts to improve child nutrition, suboptimal IYCF practices remain highly prevalent, particularly in low- and middle-income countries, contributing substantially to undernutrition among children under five years of age.

Malnutrition continues to be a major public health challenge, accounting for nearly 45% of deaths among children younger than five years worldwide. Children with severe acute malnutrition are at increased risk of recurrent infections, impaired cognitive development, delayed physical growth, and poor long-term health outcomes [2]. Nutritional Rehabilitation Centres (NRCs) have been established in India to provide comprehensive management of severe acute malnutrition while simultaneously educating caregivers regarding appropriate feeding practices and nutrition counselling [3].

Inadequate breastfeeding, delayed initiation of complementary feeding, poor dietary diversity, insufficient meal frequency, and inappropriate feeding during illness are among the leading determinants of childhood malnutrition. The World Health Organization (WHO) and UNICEF have updated standardized IYCF indicators to

facilitate uniform assessment of feeding practices and identify gaps requiring intervention [4]. These indicators provide valuable information for designing targeted nutrition programmes and monitoring their effectiveness. [5]

India continues to face a considerable burden of child malnutrition despite improvements in maternal and child health services. Understanding the feeding practices of children admitted to Nutritional Rehabilitation Centres is essential for identifying modifiable risk factors and strengthening caregiver education. The present study aims to assess infant and young child feeding (IYCF) practices among malnourished children admitted to the Nutritional Rehabilitation Centre at Shri Atal Bihari Vajpayee Medical College and Research Institute. The objectives are to evaluate breastfeeding and complementary feeding practices, assess adherence to recommended IYCF guidelines, identify inappropriate feeding behaviors associated with malnutrition, and generate evidence to support effective nutritional counselling and interventions for improving child health outcomes.

MATERIALS AND METHODS

Study design: A hospital-based cross-sectional observational study.

Study population: Children aged 6–59 months with malnutrition admitted to the Nutritional Rehabilitation Centre (NRC), along with their primary caregivers.

Sample size:

- The sample size was calculated using data from Meshram et al. [6] in an Indian study on infant and young child feeding practices. Using the formula $N = 4PQ/d^2$, where, P is the Expected prevalence of the selected IYCF practice from a previous study (0.50), Q = 100-P (50), and d = allowable error/precision (11.8%). The required sample size was 80.

Therefore, the minimum required sample size was 80 children, and all 80 eligible children admitted to the Nutritional Rehabilitation Centre during the study period were included in the study.

Study duration: The study was conducted over a period of 6 months.

Study setting/location: The study was carried out in the Department of Paediatrics, Nutritional Rehabilitation Centre at a major tertiary-care public referral hospital affiliated with a medical college in southern India.

Inclusion Criteria

- Children aged 6–59 months diagnosed with moderate or severe acute malnutrition.
- Children admitted to the NRC during the study period.
- Caregivers willing to provide written informed consent.

Exclusion Criteria

- Children with congenital anomalies or chronic illnesses affecting nutritional status.
- Children whose caregivers were unwilling to participate.
- Readmission cases during the study period.

Statistical Analysis: The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 27.0 (IBM Corp., Armonk, NY, USA). Continuous variables were tested for normality and presented as mean $\pm$ standard deviation (SD), while categorical variables were expressed as frequency and percentage. Associations between categorical variables were assessed using the Chi-square test or Fisher's exact test, as appropriate. Differences in continuous variables between groups were evaluated using the independent samples t-test. A two-tailed p-value <0.05 was considered statistically significant. The results were summarized using appropriate tables to facilitate interpretation of infant and young child feeding practices and nutritional characteristics among the study participants.

RESULT

A total of 80 malnourished children were included in the study, and their baseline characteristics are presented in Table 1. Children aged 18–24 months constituted the largest age group (41.2%), followed by those aged 6–11 months (32.5%) and 12–17 months (26.3%). Male children accounted for 53.8% of the study population. Equal proportions of participants were diagnosed with Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM), each representing 50.0% of the cohort. The mean age of the children was 14.78 ± 5.35 months, while the mean weight, height, MUAC, and weight-for-height Z score were 7.11 ± 1.11 kg, 70.56 ± 5.77 cm, 11.14 ± 0.68 cm, and -2.99 ± 0.74 , respectively.

Table 1. Baseline Characteristics of the Study Participants

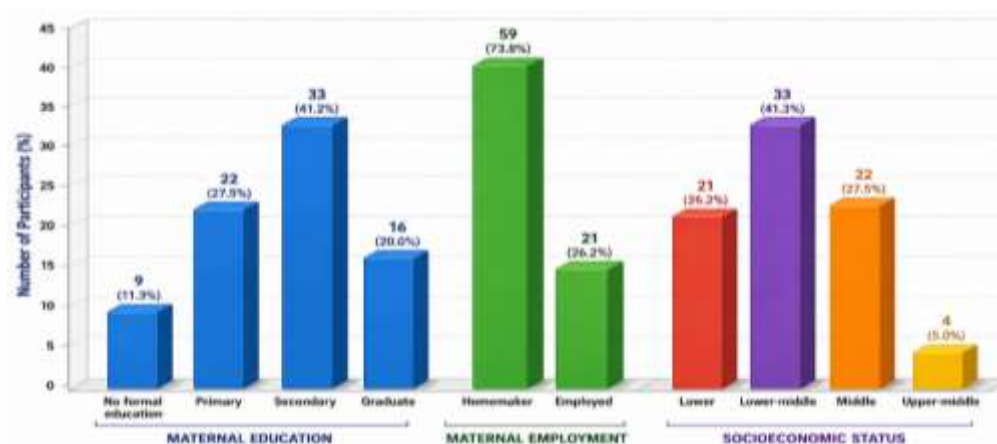
Variable	Category	n (%) / Mean $\pm$ SD
Age group (months)	6–11	26 (32.5)
	12–17	21 (26.3)
	18–24	33 (41.2)
Sex	Male	43 (53.8)
	Female	37 (46.2)
Nutritional status	Severe Acute Malnutrition (SAM)	40 (50.0)
	Moderate Acute Malnutrition (MAM)	40 (50.0)
Age (months)	Mean $\pm$ SD	14.78 $\pm$ 5.35
Weight (kg)	Mean $\pm$ SD	7.11 $\pm$ 1.11
Height (cm)	Mean $\pm$ SD	70.56 $\pm$ 5.77
MUAC (cm)	Mean $\pm$ SD	11.14 $\pm$ 0.68
Weight-for-Height Z score	Mean $\pm$ SD	–2.99 $\pm$ 0.74

The maternal and household characteristics of the participants are summarized in Table 2 and illustrated in Figure 1. The mean maternal age was 24.95 ± 2.45 years, with an average BMI of 21.04 ± 2.55 kg/m². Most mothers had completed secondary education (41.2%) and were homemakers (73.8%). Regarding socioeconomic status, the largest proportion of families belonged to the lower-middle class (41.3%), followed by the middle (27.5%) and lower (26.2%) socioeconomic groups.

Table 2. Maternal and Household Characteristics

Variable	Category	n (%) / Mean $\pm$ SD
Maternal age (years)	Mean $\pm$ SD	24.95 $\pm$ 2.45
Maternal BMI (kg/m ²)	Mean $\pm$ SD	21.04 $\pm$ 2.55
Number of children	Mean $\pm$ SD	1.96 $\pm$ 0.82
Maternal education	No formal education	9 (11.3)
	Primary	22 (27.5)
	Secondary	33 (41.2)
	Graduate	16 (20.0)
Maternal employment	Homemaker	59 (73.8)
	Employed	21 (26.2)
Socioeconomic status	Lower	21 (26.2)
	Lower-middle	33 (41.3)
	Middle	22 (27.5)
	Upper-middle	4 (5.0)

Figure 1. Distribution of Maternal Sociodemographic Characteristics Among Study Participants

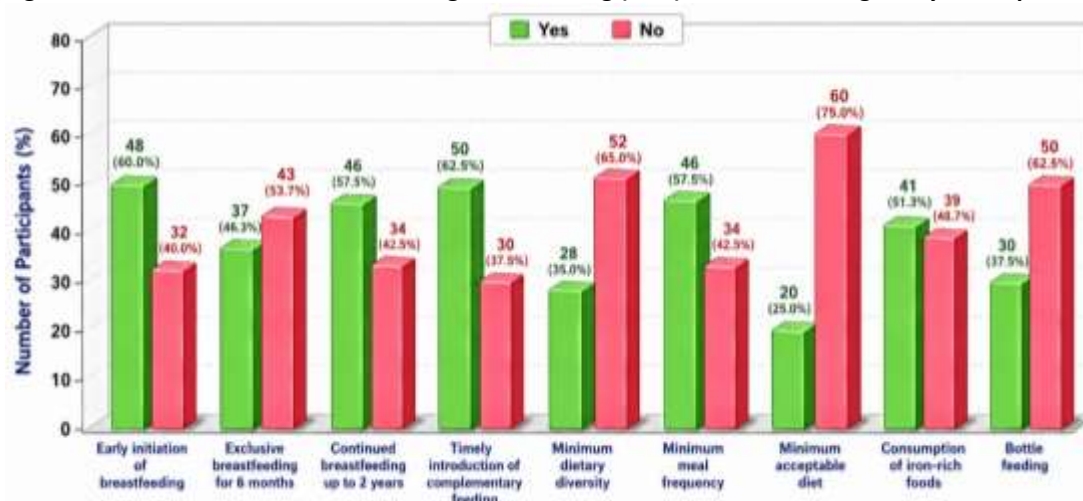


Early initiation of breastfeeding was reported in 60.0% of children, whereas exclusive breastfeeding for the first six months was practiced in 46.3%. Continued breastfeeding up to two years was observed in 57.5% of participants, and timely initiation of complementary feeding was documented in 62.5%. However, only 35.0% of children achieved minimum dietary diversity, 57.5% met the minimum meal frequency, and 25.0% received a minimum acceptable diet. Consumption of iron-rich foods was reported in 51.3% of children, while 37.5% had a history of bottle feeding. Infant and young child feeding (IYCF) practices are presented in Table 3 and Figure 2.

Table 3. Infant and Young Child Feeding (IYCF) Practices Among Malnourished Children

Feeding Practice	Yes n (%)	No n (%)
Early initiation of breastfeeding	48 (60.0)	32 (40.0)
Exclusive breastfeeding for 6 months	37 (46.3)	43 (53.7)
Continued breastfeeding up to 2 years	46 (57.5)	34 (42.5)
Timely introduction of complementary feeding	50 (62.5)	30 (37.5)
Minimum dietary diversity	28 (35.0)	52 (65.0)
Minimum meal frequency	46 (57.5)	34 (42.5)
Minimum acceptable diet	20 (25.0)	60 (75.0)
Consumption of iron-rich foods	41 (51.3)	39 (48.7)
Bottle feeding	30 (37.5)	50 (62.5)

Figure 2. Distribution of Infant and Young Child Feeding (IYCF) Practices Among Study Participants



Equal proportions of children were affected by SAM and MAM (50.0% each). The prevalence of exclusive breastfeeding, timely complementary feeding, minimum dietary diversity, and minimum acceptable diet was 46.3%, 62.5%, 35.0%, and 25.0%, respectively. The mean MUAC was 11.14 ± 0.68 cm, and the mean weight-for-height Z score was -2.99 ± 0.74 , reflecting a substantial burden of acute malnutrition among the study participants. The overall nutritional and feeding indicators are summarized in Table 4.

Table 4. Summary of Key Indicators of Feeding Practices and Nutritional Status

Indicator	Value
Children with SAM	40 (50.0%)
Children with MAM	40 (50.0%)
Exclusive breastfeeding rate	46.30%
Timely complementary feeding	62.50%
Minimum dietary diversity achieved	35.00%
Minimum meal frequency achieved	57.50%
Minimum acceptable diet achieved	25.00%
Bottle-fed children	37.50%
Mean Weight-for-Height Z score	-2.99 ± 0.74

DISCUSSION

The present study demonstrated that the majority of malnourished children admitted to the Nutritional Rehabilitation Centre were aged 18–24 months (41.2%), with a slight predominance of males (53.8%). This age group corresponds to the transition from exclusive breastfeeding to complementary feeding, a period during which inappropriate feeding practices commonly contribute to undernutrition. Similar observations were reported by Aguayo et al., who identified children between 12 and 24 months as being at the highest risk of growth faltering due to inadequate complementary feeding practices in low- and middle-income countries [7]. Likewise, Nguyen et al. found that male children were more frequently represented among undernourished children admitted to nutritional care facilities [8].

Maternal and household characteristics in the present study indicated that most mothers had secondary education and belonged to lower-middle socioeconomic households. Although maternal literacy was relatively satisfactory, poor feeding practices persisted, suggesting that socioeconomic constraints and limited nutritional awareness may influence child nutrition. Comparable findings were reported by Saha et al., who observed that maternal education alone was insufficient to ensure appropriate IYCF practices when household resources were limited [9]. Similarly, Victora et al. emphasized that socioeconomic inequalities remain important determinants of childhood nutritional outcomes despite improvements in maternal education [10].

Assessment of infant and young child feeding practices revealed that only 46.3% of children were exclusively breastfed, while 62.5% received timely complementary feeding. However, the prevalence of adequate dietary diversity (35.0%) and minimum acceptable diet (25.0%) was considerably low. These findings are consistent with the multicountry analysis by UNICEF, which documented inadequate complementary feeding quality as a major contributor to childhood malnutrition in developing countries [11]. Comparable results were also reported by Saha et al., who found low rates of dietary diversity among undernourished Indian children despite relatively better complementary feeding initiation [12].

The equal distribution of SAM and MAM (50% each), together with a mean weight-for-height Z score of -2.99 ± 0.74 and MUAC of 11.14 ± 0.68 cm, confirms the substantial burden of acute malnutrition among the study population. Similar anthropometric profiles have been described by Isanaka et al., who demonstrated that children admitted to nutritional rehabilitation centres generally exhibit severe wasting associated with poor feeding practices [13]. Furthermore, WHO has highlighted that improving breastfeeding, dietary diversity, and meal frequency remains fundamental for reducing severe acute malnutrition and improving child survival [14].

CONCLUSION

The present study highlights that inappropriate infant and young child feeding (IYCF) practices are common among malnourished children admitted to the Nutritional Rehabilitation Centre. Although timely initiation of complementary feeding and continued breastfeeding were reported in a considerable proportion of children, exclusive breastfeeding, dietary diversity, and minimum acceptable diet remained suboptimal. These inadequate feeding practices, together with socioeconomic challenges, likely contributed to the high burden of both moderate and severe acute malnutrition. Strengthening caregiver education, promoting evidence-based IYCF practices, and enhancing community-based nutrition counselling through regular follow-up can play a crucial role in preventing childhood malnutrition and improving overall child health outcomes.

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