



Original Article

Socio-Demographic and Feeding Related Determinants of Severe Acute Undernutrition among Children Aged 6–59 Months: A Case–Control Study from a Tertiary Care Centre

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ABSTRACT

Background: Severe acute undernutrition remains a major contributor to childhood morbidity and mortality, particularly in low- and middle-income countries. It is influenced by a complex interplay of socio-demographic, feeding, and healthcare-related factors, many of which are preventable. Identifying these determinants is essential for developing effective interventions. **Objectives:** To identify socio-demographic, feeding, and healthcare-related risk factors associated with severe acute undernutrition among children aged 6–59 months. **Methods:** A hospital-based case–control study was conducted in a tertiary care centre, including 60 children aged 6–59 months. Thirty children diagnosed with severe acute undernutrition constituted the case group, while 30 age-matched children with normal nutritional status served as controls. Data regarding socio-demographic characteristics, infant feeding practices, immunization status, and birth interval were collected using a structured questionnaire. Anthropometric measurements were recorded using standard techniques. Statistical analysis was performed using appropriate tests, and a p-value <0.05 was considered significant. **Results:** Significant associations were observed between severe acute undernutrition and maternal illiteracy (70.0% vs 33.3%; p=0.005), paternal illiteracy (46.7% vs 3.3%; p=0.001), and lower socioeconomic status (96.7% vs 10.0%; p=0.001). Feeding-related factors such as lack of exclusive breastfeeding (73.3% vs 16.7%; p=0.001) and inappropriate complementary feeding (100% vs 20.0%; p=0.001) were strongly associated. Incomplete immunization (86.7% vs 20.0%; p=0.001) and shorter birth interval (≤ 2 years) (59.1% vs 6.3%; p=0.001) were also significant. **Conclusion:** Severe acute undernutrition is strongly associated with modifiable socio-demographic and feeding practices. Strengthening maternal education, promoting optimal infant feeding, improving immunization coverage, and ensuring adequate birth spacing are crucial for prevention.

Keywords: Severe acute undernutrition.

INTRODUCTION

Severe acute undernutrition remains one of the most critical public health challenges affecting children under five years of age, particularly in low- and middle-income countries. It represents a severe form of malnutrition resulting from prolonged deficiency of energy, protein, and essential micronutrients, often compounded by recurrent infections and adverse socio-demographic conditions^{1,2}. Children aged 6–59 months are especially vulnerable due to rapid growth, increased nutritional demands, and transitions in feeding practices during this period³.

According to the diagnostic criteria proposed by the World Health Organization, severe acute undernutrition is identified by a weight-for-height or weight-for-length Z-score below -3 standard deviations, a mid-upper arm circumference less than 115 mm, visible severe wasting, or the presence of bilateral nutritional edema¹. The condition significantly increases the risk of morbidity and mortality by predisposing children to infections such as diarrhea and pneumonia⁴. In addition to its immediate consequences, severe undernutrition has long-term effects on physical growth, cognitive development, and future economic productivity⁵.

Despite ongoing national nutrition programs and public health initiatives, the burden of severe acute undernutrition continues to be substantial in India. According to the UNICEF and national survey data, a considerable proportion of under-five children continue to suffer from wasting and related complications⁶. Multiple interrelated factors contribute to its occurrence, including socio-demographic characteristics, inappropriate infant and young child feeding practices, and gaps in healthcare utilization⁷⁸. Understanding these determinants is essential for designing targeted and effective preventive strategies.

In this context, the present study titled “Socio Demographic and Feeding Related Determinants of Severe Acute Undernutrition among Children Aged 6–59 Months: A Case–Control Study from a Tertiary Care Centre” was undertaken with the objective to identify socio-demographic, feeding, and healthcare-related risk factors associated with severe acute undernutrition in children aged 6–59 months. By exploring these associations, the study aims to provide evidence that can support improved interventions and policy planning to reduce the burden of severe acute undernutrition.

MATERIALS AND METHODS

This observational case–control study was conducted at a tertiary care teaching hospital in India after obtaining approval from the Institutional Ethics Committee. Written informed consent was obtained from parents or legal guardians prior to enrollment. Children aged 6–59 months diagnosed with severe acute undernutrition constituted the case group, while age matched children admitted for other acute medical conditions with normal nutritional status served as controls. Children with congenital anomalies, chronic systemic illnesses, or congenital heart disease were excluded from the study. A structured questionnaire was used to record demographic details, clinical presentation, birth and developmental history, feeding practices including breastfeeding and complementary feeding, immunization status, and family characteristics. Socioeconomic status was assessed using the Kuppuswamy classification. Anthropometric measurements such as weight, height/length, and mid upper arm circumference were recorded using standard techniques. Statistical analysis was performed using SPSS software. Quantitative variables were analyzed using Student’s t test, while categorical variables were compared using Chi square test. A p value less than 0.05 was considered statistically significant.

RESULTS

Table 1: Determinants Associated with Severe Acute Undernutrition

Risk Factor	Cases (n = 30)	Controls (n = 30)	P-value
Maternal illiteracy	21 (70.0%)	10 (33.3%)	0.005
Paternal illiteracy	14 (46.7%)	1 (3.3%)	0.001
Lower socioeconomic class (IV & V)	29 (96.7%)	3 (10.0%)	0.001
Lack of exclusive breastfeeding	22 (73.3%)	5 (16.7%)	0.001
Inappropriate complementary feeding (< or > 6 months)	30 (100%)	6 (20.0%)	0.001
Incomplete immunization	26 (86.7%)	6 (20.0%)	0.001
Birth interval \leq 2 years	13 (59.1%)	1 (6.3%)	0.001

A total of 60 children aged 6–59 months were included in the study, comprising 30 cases with severe acute undernutrition and 30 age-matched controls. Among the cases, 17 (56.7%) were males and 13 (43.3%) were females, with a male-to-female ratio of approximately 1.3:1. The mean age of children in the case group was 27.4 ± 16.2 months, whereas in the control group it was 21.8 ± 13.1 months.

Analysis of socio-demographic factors revealed a statistically significant association between parental education and severe acute undernutrition. Maternal illiteracy was observed in 70.0% of cases compared to 33.3% of controls ($p=0.005$). Similarly, paternal illiteracy was significantly higher among cases (46.7%) than controls (3.3%) ($p=0.001$).

Socioeconomic status demonstrated a strong association with nutritional status. A majority of cases (96.7%) belonged to lower socioeconomic classes (IV and V), compared to only 10.0% of controls ($p=0.001$).

Feeding practices were significantly associated with severe acute undernutrition. Lack of exclusive breastfeeding was observed in 73.3% of cases compared to 16.7% of controls ($p=0.001$). Inappropriate timing of complementary feeding (either early or delayed) was reported in all cases (100%) versus 20.0% of controls ($p=0.001$).

Healthcare-related factors also showed significant associations. Incomplete immunization was present in 86.7% of cases compared to 20.0% of controls ($p=0.001$). Additionally, a birth interval of ≤ 2 years was significantly more common among cases (59.1%) than controls (6.3%) ($p=0.001$).

These findings indicate that socio-demographic characteristics, suboptimal feeding practices, and inadequate healthcare utilization are strongly associated with severe acute undernutrition in children.

DISCUSSION

The present study highlights the multifactorial nature of severe acute undernutrition among children aged 6–59 months, with significant contributions from socio-demographic, feeding, and healthcare-related determinants. Parental education emerged as a key factor, with higher prevalence of maternal and paternal illiteracy among cases. This finding is consistent with previous studies, which emphasize that caregiver education influences feeding practices, hygiene, and healthcare-seeking behavior⁷.

Lower socioeconomic status showed a strong association with severe acute undernutrition, reflecting limited access to adequate nutrition, sanitation, and healthcare services. Similar observations have been reported in global analyses, where poverty remains a central determinant of child undernutrition².

Feeding practices played a critical role in the development of severe acute undernutrition. The lack of exclusive breastfeeding and inappropriate timing of complementary feeding were significantly associated with undernutrition in this study. Evidence suggests that exclusive breastfeeding during the first six months provides optimal nutrition and immunity, while deviations from recommended complementary feeding practices increase vulnerability to malnutrition and infections⁸.

Incomplete immunization was another significant determinant identified in this study. Children with inadequate immunization are more prone to recurrent infections, which exacerbate nutritional deficiencies and contribute to a vicious cycle of illness and malnutrition⁴. This underscores the importance of strengthening routine immunization services as part of nutritional interventions.

Short birth intervals were also significantly associated with severe acute undernutrition. Closely spaced pregnancies may lead to maternal nutritional depletion and reduced caregiving capacity, adversely affecting child health outcomes. Previous studies have similarly highlighted the importance of adequate birth spacing in preventing undernutrition⁵.

Overall, the findings of this study are in agreement with established literature, reinforcing that severe acute undernutrition is not merely a consequence of inadequate food intake but a complex interplay of social, behavioral, and healthcare-related factors. Addressing these determinants through integrated, multi-sectoral approaches is essential for effective prevention and control.

CONCLUSION

Severe acute undernutrition among children aged 6–59 months is strongly associated with preventable socio-demographic, feeding, and healthcare-related factors. Parental illiteracy, low socioeconomic status, lack of exclusive breastfeeding, inappropriate complementary feeding practices, incomplete immunization, and short birth intervals were identified as significant determinants.

These findings highlight the need for comprehensive interventions focusing on maternal education, promotion of optimal infant and young child feeding practices, strengthening immunization coverage, and encouraging appropriate birth spacing. A multi-dimensional strategy integrating nutrition, healthcare, and social support systems is essential to effectively reduce the burden of severe acute undernutrition and improve child survival and development outcomes.

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