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Brief Report

Prevalence of malnutrition in admitted children and post-intervention parental awareness at a tertiary care hospital

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ABSTRACT

Malnutrition is a major contributor to childhood morbidity and mortality in India, particularly among hospitalized children who are vulnerable due to underlying illnesses. Parental education has the potential to reduce malnutrition through improved awareness and feeding practices. Objectives were to assess the prevalence of malnutrition among pediatric inpatients and to evaluate the effectiveness of a structured parental education session on caregiver knowledge regarding malnutrition prevention and feeding during illness. A cross-sectional pre-post educational intervention study was conducted among 20 children (6 months-12 years) admitted to a tertiary care hospital in New Delhi, along with their caregivers. Nutritional status was assessed using anthropometric indices and MUAC, based on WHO standards. Caregiver knowledge was assessed using a structured questionnaire before and after a 20-minute education session. Data were analysed using descriptive statistics and paired t-test. The prevalence of malnutrition was high, with 70% of children classified as malnourished. Specifically, 35% had grade I, 20% grade II, and 15% grade III malnutrition, while MUAC assessment revealed 30% severe and 40% moderate malnutrition. Chronic illnesses such as kidney disorders and cancer were commonly associated. The mean caregiver knowledge score improved significantly from 13.3 (pre-test) to 21.0 (post-test), with a mean difference of 7.7 ($t=-17.5$, $p<0.05$). Malnutrition was highly prevalent among hospitalized children. A brief structured parental education session significantly improved caregiver knowledge, underscoring the importance of integrating parental counselling into routine pediatric ward care to address malnutrition.

Keywords: Malnutrition, Pediatric inpatients, Caregiver education, MUAC, Nutritional status

INTRODUCTION

Malnutrition remains a major public health challenge in India, contributing to nearly half of all deaths in children under five years of age (UNICEF).[1] According to NFHS-5 (2019-21), the prevalence of stunting, wasting, and underweight among Indian children under five is 35.5%, 19.3%, and 32.1%, respectively.[2] These numbers are likely even higher among hospitalized children, who are often more vulnerable due to underlying illness (Mehta et al).[3]

Hospitalization offers a crucial opportunity to not only assess a child's nutritional status but also to educate caregivers, a step that is often overlooked (Joosten and Hulst).[4] Parental education has shown promising

outcomes in reducing paediatric malnutrition and improving dietary practices at home (Daba et al).[5]

This study aimed to assess the prevalence of malnutrition among paediatric inpatients and evaluate the impact of a structured parental education session on improving awareness of malnutrition prevention and feeding during illness.

METHODS

A cross-sectional study with a pre-post educational intervention was conducted in the pediatric ward of a tertiary care hospital in New Delhi, India. Children aged 6 months to 12 years admitted to the pediatric ward, along with their caregivers, were eligible. Inclusion criteria were children admitted for at least 48 hours and caregivers willing to participate. Exclusion criteria included were children with congenital anomalies affecting growth, critically ill children unable to undergo anthropometric measurements, and caregivers who declined participation.

A total of 20 children and their caregivers were recruited using convenience sampling, as this was a pilot study. The minimum sample size was estimated using the formula $n=(Z^2\times p\times(1-p))/d^2$, assuming a prevalence (p) of 30% malnutrition, 95% confidence, and 20% relative precision, which yielded a required sample of 18; hence, 20 were included. Nutritional status was assessed using anthropometric indicators-weight-for-age and MUAC-classified according to WHO child growth standards. A structured questionnaire adapted from validated tools was used to assess parental knowledge regarding malnutrition and feeding practices before and after an educational session.

A 20-minute interactive session in the local language was delivered using visual aids, covering malnutrition signs, feeding practices during illness, and locally available foods. Written informed consent was obtained from all caregivers. Data were coded and analyzed using SPSS version 25. Descriptive statistics (frequency, percentage, mean, SD) were used for demographic and clinical variables. Paired t-test was applied to compare pre-test and post-test parental knowledge scores, with significance set at $p<0.05$.

RESULTS

A total of 20 children participated in the study. The majority (35%) were in the age group of 3-6 years, followed by 30% each in the 0-12 months and 6-12 years groups, while only 5% were between 1-3 years of age. With respect to sex, boys constituted a higher proportion (60%) compared to girls (40%). Regarding socio-economic status, 45% of the participants belonged to the lower class, 30% to the middle class, and 25% to the upper class.

The study findings revealed that the majority of children were diagnosed with kidney disorders (45%), followed by cancer (30%) and rheumatoid disorders (25%). With respect to birth order, more than half of the children (55%) were second-born, while 25% were first-born and 20% were third-born. Analysis of immunization status indicated that 55% of the children were undergoing immunization, 30% were partially immunized, and 15% had not received any immunization (Table 2).

Table 1: Distribution of children according to age, sex, and socio-economic status (n=20).

Features	N	Percentage (%)
Age (in years)		
0-12 months	6	30
1-3	1	5
3-6	7	35
6-12	6	30
Sex		
Boy	12	60
Girl	8	40
Socio-economic status		
Lower	9	45
Middle	6	30
Upper	5	25

Table 2: Distribution of children by diagnosis, birth order, and immunization status (n=20).

Features	N	Percentage (%)
Diagnosis		
Cancer	6	30
Kidney disorders	9	45
Rheumatoid disorders	5	25
Birth order		
First	5	25
Second	11	55
Third	4	20
Immunisation status		
Not immunized	3	15
Ongoing immunization	11	55
Partially immunized	6	30

Assessment of nutritional status revealed that 35% of the children were affected by grade I malnutrition, 20% had grade II, and 15% had grade III malnutrition, while 30% did not exhibit any signs of malnutrition (Figure 1). Assessment of 24-hour dietary recall revealed that majority 18 (90%) of the children were having inadequate pattern of diet and only 2 (10%) were having adequate dietary pattern.

Similarly, MUAC assessment showed that 40% of the children had moderate malnutrition, 30% were severely malnourished, and 30% were in the healthy range (Figure 2). These findings highlight that a substantial proportion

of children were affected by varying degrees of malnutrition, with mild to moderate forms being more common than severe malnutrition.

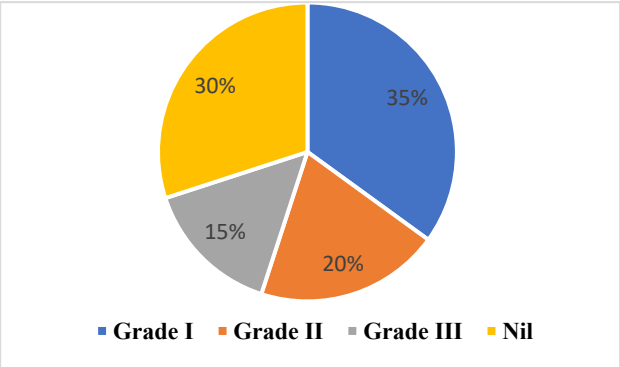

Figure 1: Percentage distribution of children according to degree of malnutrition.

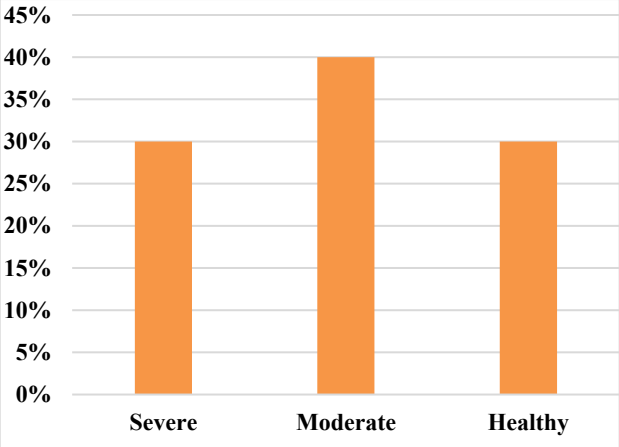

Figure 2: Percentage distribution of children according to degree of malnutrition based on middle upper arm circumference.

Table 3: Mean pre-test and post-test scores (n=20).

Knowledge assessment	Mean	Mean difference	T value	T critical	P value
Pre-test	13.3	7.7	-17.5	-2.093	<0.05
Post test	21				

The mean pre-test knowledge score of parents was 13.3, which increased to 21.0 in the post-test following the intervention. The mean difference of 7.7 reflects a considerable improvement in knowledge levels. Statistical analysis using the paired t-test yielded a t-value of -17.5, which exceeded the t-critical value of -2.093 at df=19. This indicates that the improvement in parental knowledge after the intervention was statistically significant ($p<0.05$) (Table 3).

DISCUSSION

The present study revealed that 70% of hospitalized children were malnourished, which is higher than the NFHS-5 estimates for underweight (32.1%) and wasting (19.3%) among Indian children under five (NFHS-5, 2021).[2] This indicates that hospitalized children are particularly vulnerable due to concurrent illnesses. Similar hospital-based studies in India (Kumar et al and Mehta et al) reported malnutrition prevalence between 50-65%, consistent with our findings.[3,6]

We also observed that malnutrition was more common among children with cancer and kidney disorders. Chronic illness is a known risk factor for poor nutritional outcomes, as reported in studies by Joosten and Hulst.[4]

Parental education showed significant improvement in knowledge scores, supporting earlier findings from Ethiopia (Daba et al) and India (Kumar et al) where structured caregiver education enhanced feeding practices.[5,6] Hospital-based interventions therefore represent a critical strategy to reduce malnutrition recurrence and improve long-term child health outcomes.

Limitations

The study was limited by its small sample size and single-centre design, restricting generalizability. Dietary history relied on caregiver recall, which may have introduced bias. Nonetheless, the findings provide important pilot data on the role of hospital-based parental education.

CONCLUSION

The study documented high prevalence of malnutrition among hospitalized children. A brief structured parental education session significantly improved caregiver knowledge regarding malnutrition prevention and management. Integrating parental counselling into routine paediatric ward care can help mitigate the burden of childhood malnutrition.

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