ORIGINAL ARTICLE

Socio-Demographic Factors of Nutritional Status in Children Registered at Anganwadi Centres in Bareilly District

Aniket Shukla[1], Rashmi Katyal[2], Piyush Gupta[3], Ghos Ahmed[3]

[1]Post Graduate Student, Community Medicine Department, Rohilkhand Medical College and Hospital (RMCH), Bareilly, Uttar Pradesh, India;
[2]Professor and Head, Community Medicine Department, Rohilkhand Medical College and Hospital (RMCH), Bareilly, Uttar Pradesh, India;
[3]Associate Professor, Community Medicine Department, Rohilkhand Medical College and Hospital (RMCH), Bareilly, Uttar Pradesh, India.

Corresponding author:
Aniket Shukla
Post Graduate Student, Community Medicine Department, Rohilkhand Medical College and Hospital (RMCH), Bareilly,
Uttar Pradesh, India
Email: aniket199711@gmail.com

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ABSTRACT

Background: Childhood malnutrition remains a major public health concern in India and is strongly influenced by underlying socio-demographic factors. Despite the implementation of nutrition support programs through Anganwadi Centres under the Integrated Child Development Services (ICDS), undernutrition continues to persist, particularly in socio-economically disadvantaged populations.

Aim: To assess the nutritional status in children registered at anganwadi centres in Bareilly district.

Objective: To determine the socio-demographic factors of nutritional status in children registered at anganwadi centres in Bareilly district.

Methods: A community-based cross-sectional study was conducted over a period of one year among 383 children aged 6 months to 6 years registered at Anganwadi Centres in Bareilly district. A multi-stage sampling technique was used. Data were collected using a pre-tested and pre-validated schedule. Socio-demographic details were obtained from caregivers, and nutritional status was assessed using standard anthropometric indicators. Data entry and statistical analysis were performed using SPSS version 23.0. Associations between socio-demographic variables and nutritional status were analyzed using the chi-square test, with $p < 0.05$ considered statistically significant.

Results: Malnutrition was significantly associated with rural residence ($p = 0.041$), low maternal education ($p = 0.001$), monthly household income below ₹10,000 ($p = 0.002$), and family size of five or more members ($p = 0.003$). Gender did not show a statistically significant association with nutritional status ($p = 0.882$).

Conclusion: The study highlights that childhood malnutrition is significantly influenced by socio-demographic determinants such as residence, maternal education, socio-economic status, and family size. Addressing these social determinants alongside strengthening Anganwadi services is essential for improving child nutritional outcomes in the district.

KEYWORDS: Childhood malnutrition; Socio-demographic factors; Nutritional status; Anganwadi Centres; ICDS; Bareilly district; Under-five children;

INTRODUCTION

Childhood malnutrition is strongly influenced by socio-demographic factors that determine access to food, healthcare, sanitation, and nutrition-related knowledge. Variables such as parental education, household income, family size, and place of residence play a decisive role in shaping dietary practices, health-seeking behavior, and utilization of nutrition services, thereby influencing the nutritional status of children.[1,2]

In India, socio-demographic inequalities continue to sustain a high burden of child undernutrition. Children from low socio-economic backgrounds, rural areas, and households with low parental literacy are disproportionately affected by stunting, wasting, and underweight.[2] The National Family Health Survey-5 (NFHS-5, 2019–21) demonstrates that child nutrition indicators vary significantly across socio-economic and educational strata, indicating that malnutrition is closely linked to underlying social and demographic determinants rather than food availability alone.[2]

Maternal education is a key socio-demographic determinant of child nutrition. Educated mothers are more likely to practice exclusive breastfeeding, initiate timely complementary feeding, and utilize healthcare services appropriately, whereas low maternal literacy is associated with poor feeding practices and higher prevalence of undernutrition among children.[3] Socio-economic status further influences household food security and dietary diversity, with children from low-income families often consuming nutritionally inadequate, cereal-dominated diets.[3,4]

Place of residence is another important socio-demographic factor affecting nutritional outcomes. Rural children experience higher levels of malnutrition due to limited access to healthcare facilities, lower awareness of optimal feeding practices, and poorer sanitation conditions.[2] In Uttar Pradesh, socio-demographic challenges such as poverty, low female literacy, large family size, and inadequate infrastructurre contribute significantly to persistently high levels of childhood undernutrition.[2,5]

Bareilly district, located in western Uttar Pradesh, exhibits wide socio-demographic diversity with a predominantly rural population. District-level studies have identified significant associations between childhood undernutrition and socio-demographic factors such as low parental education, low household income, and larger family size.[5,6,7] Despite the presence of Anganwadi Centres under the Integrated Child Development Services (ICDS) scheme, malnutrition persists among enrolled children, highlighting the continued influence of socio-demographic determinants on nutritional status.[9,5]

Therefore, assessment of socio-demographic factors influencing the nutritional status of children registered at Anganwadi Centres is essential to identify vulnerable groups, understand inequities, and strengthen targeted interventions under Poshan Abhiyaan 2.0.[9,5] This forms the basis for the present study focusing on the socio-demographic determinants of malnutrition among children aged 6 months to 6 years in Bareilly district.

Aim

- To assess the nutritional status in children registered at anganwadi centres in Bareilly district.

Objective

- To determine the socio-demographic factors of nutritional status in children registered at anganwadi centres in Bareilly district.

MATERIAL AND METHODS

Study Design: A cross-sectional study was conducted.

Study Setting: Anganwadi Centres of Bareilly district.

Study Duration: One year.

Study Participants: Children registered at Anganwadi centres aged 6 months to 6 years and residing in Bareilly district were included.

Inclusion Criteria:

1. Children aged between 6 months to 6 years were included to focus on the specific age group registered at Anganwadi Centres.
2. Children who had resided in Bareilly district for more than 6 months were included.

Exclusion Criteria:

1. Parents who did not provide consent for their child's participation were excluded.
2. Children suffering from severe illness or medical conditions that prevented participation due to chronic diseases or disabilities were excluded.

Sample Size Calculation

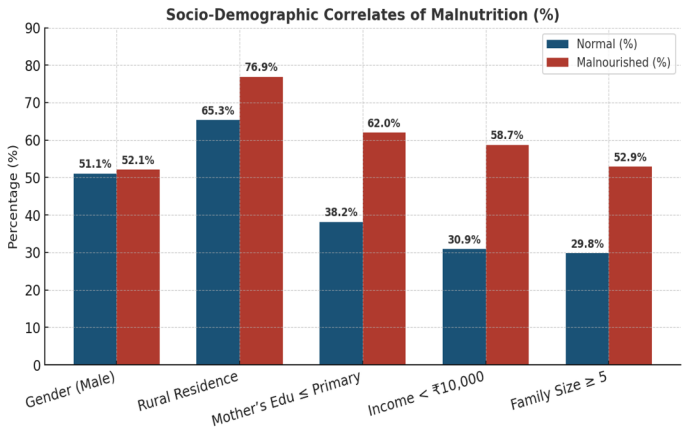
The sample size was calculated using the standard formula ( ), Where p = 32% (prevalence of underweight as per NFHS-5)9, value came out to be 350. & Adding 10% for non-response:The final achievable sample size was fixed at 383 children registered at Anganwadi Centres.

Sampling Method: Multi-stage sampling technique was used.

Method of Data Collection: Data were collected using a pre-tested and pre-validated schedule.

Analysis of Data: Data entry and analysis were performed using SPSS (Statistical Package for the Social Sciences), Licensed Version 23.0.

RESULTS



p<0.05 statistically significant

Malnutrition was significantly associated with rural residence (p = 0.041), low maternal education (p = 0.001), monthly income < ₹10 000 (p = 0.002), and family size ≥ 5 (p = 0.003). Gender showed no significant relationship

Table 1: Association Between Socio-Demographic Factors and Nutritional Status

Variable	Normal (n = 262)	Malnourished (n = 121)	χ^2 value	df	p-value	Significance
Gender	134 (51.1 %)	63 (52.1 %)	0.02	1	0.882	NS
Residence (Rural)	171 (65.3 %)	93 (76.9 %)	4.16	1	0.041	Significant
Mother's Education ≤ Primary	100 (38.2 %)	75 (62.0 %)	11.28	1	0.001	Significant
Monthly Income < ₹10,000	81 (30.9 %)	71 (58.7 %)	12.31	1	0.002	Significant
Family Size ≥ 5	78 (29.8 %)	64 (52.9 %)	10.04	1	0.003	Significant

Interpretation → Malnutrition was significantly higher among children from rural areas, low-educated mothers, low-income households, and larger families ($p < 0.05$).

This Table shows the association between selected socio-demographic factors and the nutritional status of children. The chi-square test revealed that several background variables had a statistically significant influence on malnutrition.

The prevalence of malnutrition was slightly higher among males (52.1%) than females (51.1%), but the difference was not statistically significant ($\chi^2 = 0.02$, $p = 0.882$). This indicates that gender did not play a major role in determining nutritional status among Anganwadi-registered children.

In contrast, place of residence showed a significant relationship with nutritional status ($\chi^2 = 4.16$, $p = 0.041$). A greater proportion of malnourished children belonged to rural areas (76.9%) compared with those from urban settings (65.3%), suggesting that rural children are at higher risk of undernutrition, likely due to poorer socioeconomic conditions and limited dietary diversity.

Maternal education was another strong determinant. Among children of mothers educated up to primary level or below, 62.0% were malnourished, whereas only 38.2% of well-nourished children belonged to this group. This association was highly significant ($\chi^2 = 11.28$, $p = 0.001$), highlighting the positive influence of maternal literacy on child nutrition and feeding practices.

Similarly, monthly household income showed a significant association with nutritional status ($\chi^2 = 12.31$, $p = 0.002$). More than half of malnourished children (58.7%) were from families earning less than ₹10,000 per month, compared to only 30.9% among normally nourished children, demonstrating the role of poverty in perpetuating malnutrition.

Lastly, family size was found to be an important factor ($\chi^2 = 10.04$, $p = 0.003$). Families with five or more members had a higher proportion of malnourished children (52.9%) than smaller families (29.8%). This could be attributed to resource dilution, where limited food and care are distributed among more dependents.

In summary, the chi-square analysis established that rural residence, low maternal education, low household income, and larger family size were significantly associated with malnutrition, while gender was not. These findings underscore the multifactorial nature of childhood malnutrition, linking it closely to social, educational, and economic determinants.

DISCUSSION

The present study highlights the significant influence of socio-demographic factors on the nutritional status of children aged 6 months to 6 years registered at Anganwadi Centres in Bareilly district. Malnutrition was observed to be more prevalent among children belonging to socio-economically disadvantaged backgrounds, reaffirming that childhood undernutrition is closely linked to social and demographic determinants rather than dietary inadequacy alone.[1,2]

In the current study, a higher proportion of children were from rural areas (68.9%), and malnutrition indicators such as underweight, stunting, and wasting were more common among rural children compared to their urban counterparts. Rural residence is known to be associated with limited access to healthcare facilities, poor sanitation, and lower awareness regarding optimal infant and young child feeding practices, which collectively contribute to adverse nutritional outcomes.[2] Similar rural–urban disparities in child nutrition have been reported in Uttar Pradesh, where rural children consistently show poorer nutritional indicators than urban children.[2,5]

Parental education, particularly maternal education, emerged as an important socio-demographic determinant influencing nutritional status. In the present study, a substantial proportion of parents had only primary or secondary education, while a notable segment was illiterate. Low parental education adversely affects awareness regarding balanced diets, breastfeeding practices, timely complementary feeding, and utilization of Anganwadi services. Maternal literacy has been consistently identified as a strong predictor of improved child nutritional outcomes, whereas children of illiterate mothers are more likely to suffer from undernutrition.[3]

Socio-economic status also demonstrated a clear association with child nutritional status. Nearly two-thirds of households in the study had a monthly income of ₹10,000 or less, indicating economic vulnerability. Children from low-income families are more likely to consume monotonous, cereal-based diets with inadequate

protein and micronutrient content, increasing the risk of undernutrition.[3,4] Poverty further limits access to healthcare services and sanitation facilities, thereby compounding the risk of malnutrition through recurrent infections.[2]

Family size and household characteristics also play a contributory role in determining nutritional status. Larger families often face resource constraints, leading to reduced per-child food allocation and inadequate caregiving attention. District-level studies from Bareilly have demonstrated significant associations between childhood undernutrition and large family size, low socio-economic status, and low parental education.[5,6,7,8] These findings are consistent with the observations of the present study, reinforcing the role of socio-demographic vulnerability in shaping child nutrition outcomes.

Despite the availability of supplementary nutrition and growth monitoring services through Anganwadi Centres under the Integrated Child Development Services (ICDS) scheme, malnutrition persists among enrolled children. This suggests that the benefits of ICDS may be moderated by underlying socio-demographic factors such as poverty, low literacy, and poor living conditions.[5,9] Similar observations have been reported in other studies, where malnutrition continued even among program beneficiaries due to inadequate utilization of services and limited caregiver awareness.[5]

The findings of the present study underscore the need for socio-demographically targeted interventions under Poshan Abhiyaan 2.0. Identification of vulnerable groups based on residence, parental education, and socio-economic status can facilitate focused counselling, improved service delivery, and enhanced community participation.[5,8] Strengthening behaviour change communication and addressing social determinants alongside nutritional supplementation are essential for achieving sustained improvements in child nutritional status.

CONCLUSION

The present study concludes that the nutritional status of children aged 6 months to 6 years registered at Anganwadi Centres in Bareilly district is significantly influenced by socio-demographic factors. Children belonging to rural areas, low socio-economic strata, and families with low parental education were found to be more vulnerable to undernutrition, highlighting the strong association between social disadvantage and poor nutritional outcomes.

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