

## PREVALENCE OF CHILD MALNUTRITION AND ASSOCIATED RISK FACTORS AMONG CHILDREN AGED UNDER FIVE IN MAHESHBATHNA, BIHAR

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### Abstract

**Background:** This study is to assess the prevalence of child malnutrition and identify associated risk factors among children aged under five in Maheshbathna, Bihar. **Materials and Methods:** A cross-sectional study was conducted in Maheshbathna Under MGM Medical College & Hospital, Bihar. A total of 300 households were selected using a systematic random sampling method. Data on socio-demographic characteristics, maternal education, household income, access to clean water and sanitation facilities, and feeding practices were collected using a structured questionnaire. Anthropometric measurements, including height, weight, and mid-upper arm circumference, were taken to determine the nutritional status of the children. Descriptive statistics and variable analysis were performed to identify risk factors associated with child malnutrition. **Result:** The results revealed a high prevalence of child malnutrition in Maheshbathna. Among the children aged under five, 45% were stunted, 32% were underweight, and 22% were wasted. Based on the study, among the 300 cases, children with mothers who had a low level of education (primary education) had a higher percentage of malnutrition (40.7%). Children with mothers who had a moderate level of education (secondary education) had a lower percentage of malnutrition (33.3%). Moreover, children with mothers who had a high level of education (higher education) had the lowest percentage of malnutrition (26.0%). **Conclusion:** This study demonstrates the alarming prevalence of child malnutrition in Maheshbathna, Bihar, and highlights the importance of addressing associated risk factors. Interventions aimed at improving maternal education, reducing poverty, ensuring access to clean water and sanitation facilities, and promoting optimal feeding practices are crucial to combat child malnutrition in this region.

## INTRODUCTION

The survival of children has improved significantly in the past 50 years.<sup>[1]</sup> There has been a decrease in the global under-five death rate by almost 60%, from 93 deaths per 1000 in 1990 to 38 in 2019.<sup>[2]</sup> Even with that improvement, about 5.2 million children died before their fifth birthday in 2019 alone.<sup>[2]</sup> Chronic malnutrition is defined as a form of growth failure which causes both cognitive and physical delays in growth and development.<sup>[3]</sup> Stunting, also referred as linear growth failure, is the inability to attain potential height for a particular

age, and it is a common measurement used to identify chronic malnutrition.<sup>[3]</sup> This study will assist in determining the current prevalence of chronic malnutrition and understanding the risk factors associated with malnutrition.

### Objective

The objective of this study is to assess the prevalence of child malnutrition and identify associated risk factors among children aged under five in Maheshbathna, Bihar.

## MATERIALS AND METHODS

**Type of Study:** A Cross-sectional study

**Study Period:** The study period was December 2022 to June 2023.

**Place of Study:** Maheshbathna, under MGM Medical College & Hospital, Bihar.

**Study Population:** Children aged under five years in Maheshbathna, Bihar.

**Sample Size:** 300 households were included in the study.

### Inclusion Criteria

Children aged under five years residing in Maheshbathna, Bihar.

**Data Collection Technique:** A structured questionnaire was used to collect data on socio-demographic characteristics, maternal education, household income, access to clean water and sanitation facilities, and feeding practices. Anthropometric measurements (height, weight, and mid-upper arm circumference) were also taken to determine the nutritional status of the children.

**Statistical Analysis:** Descriptive statistics and variable analysis were performed to identify risk factors associated with child malnutrition.

## RESULTS

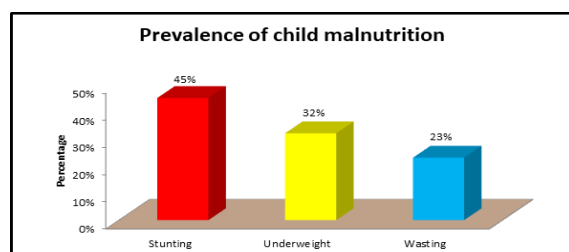


Figure 1: Prevalence of child malnutrition (n=300)

According to the study, among the children aged under five in Maheshbathna, Bihar, 45% were identified as stunted, 32% were underweight, and 23% were wasted. These figures indicate the prevalence of each type of malnutrition in the study population.

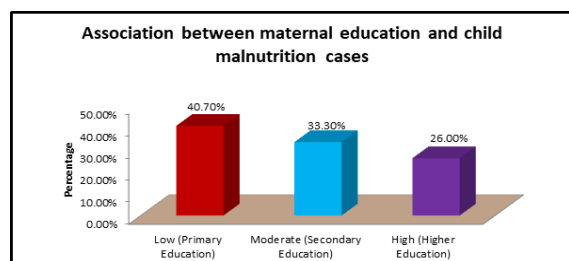


Figure 2: Association between maternal education and child malnutrition cases

Based on the study, among the 300 cases, children with mothers who had a low level of education

(primary education) had a higher percentage of malnutrition (40.7%). Children with mothers who had a moderate level of education (secondary education) had a lower percentage of malnutrition (33.3%). Moreover, children with mothers who had a high level of education (higher education) had the lowest percentage of malnutrition (26.0%). This indicates a clear association between maternal education level and the risk of child malnutrition, with higher maternal education being associated with a lower risk of malnutrition.

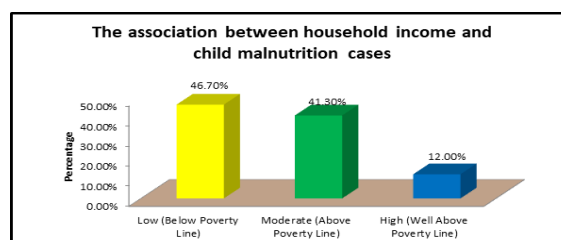


Figure 3: The association between household income and child malnutrition cases

Based on the study, among the 300 cases, children from households with low income levels (below the poverty line) had the highest percentage of malnutrition (46.7%). Children from households with moderate income levels (above the poverty line) had a lower percentage of malnutrition (41.3%). Furthermore, children from households with high income levels (well above the poverty line) had the lowest percentage of malnutrition (12.0%). These findings indicate a clear association between household income level and the risk of child malnutrition, with lower household income being associated with a higher risk of malnutrition.

Based on the study, among the 300 cases, children who had limited access to clean water and inadequate sanitation facilities had a higher percentage of malnutrition (53.3%). On the other hand, children who had sufficient access to clean water and adequate sanitation facilities had a lower percentage of malnutrition (46.7%).

Regarding feeding practices, children who experienced suboptimal feeding practices (e.g., poor diversity, improper frequency) had a higher percentage of malnutrition (69.7%). In contrast, children who followed optimal feeding practices (e.g., diverse diet, adequate frequency) had a lower percentage of malnutrition (30.3%).

These findings suggest that limited access to clean water and sanitation facilities, as well as suboptimal feeding practices, are associated with an increased risk of child malnutrition. It emphasizes the importance of ensuring adequate access to clean water, proper sanitation facilities, and promoting optimal feeding practices to reduce the risk of malnutrition among children.

**Table 1: prevalence of child malnutrition (n=300)**

Nutritional Indicator	Prevalence (%)
Stunting	45%
Underweight	32%
Wasting	23%

**Table 2: Association between maternal education and child malnutrition cases**

Maternal Education Level	Number of Children	Percentage with Malnutrition
Low (Primary Education)	122	40.7%
Moderate (Secondary Education)	100	33.3%
High (Higher Education)	78	26.0%

**Table 3: The association between household income and child malnutrition cases**

Household Income Level	Number of Children	Percentage with Malnutrition
Low (Below Poverty Line)	140	46.7%
Moderate (Above Poverty Line)	124	41.3%
High (Well Above Poverty Line)	36	12.0%

**Table 4: The association between access to clean water and sanitation facilities, feeding practices, and child malnutrition cases**

Risk Factors	Number of Children	Percentage with Malnutrition
Access to Clean Water and Sanitation Facilities		
Limited Access or Inadequate Facilities	160	53.3%
Sufficient Access and Adequate Facilities	140	46.7%
Feeding Practices		
Suboptimal Feeding Practices (e.g., poor diversity, improper frequency)	209	69.7%
Optimal Feeding Practices (e.g., diverse, adequate frequency)	91	30.3%

## DISCUSSION

A low birth weight was associated with a 1.5-fold increased risk of chronic malnutrition compared to a normal birth weight in this study. Studies in Bangladesh, Ethiopia, and Madagascar found a similar correlation between low birth weight and an increased risk of chronic malnutrition in children compared to children of normal weight at birth.<sup>[4]</sup>

It is believed that roughly 20% of the global burden of child malnutrition is caused by intrauterine growth restriction as a result of maternal under-nutrition.<sup>[5]</sup>

This is likely due to the fact that a mother's inability to eat enough before giving birth has a direct effect on her child's rate of growth. Previous research has also shown that infants and young children who are born with a low birth weight are more likely to experience developmental delays and neurological abnormalities.<sup>[6]</sup>

Moreover, it has been discovered that increased infection in low birth weight children exacerbates the link between low birth weight and malnutrition.<sup>[7]</sup> The study authors hypothesised that foetal growth restriction impaired antibody production to polysaccharide antigens, suggesting that immune system components can be irreversibly imprinted by early life events.

The findings also show that chronic malnutrition is more common in children of low-educated moms compared to those of higher-educated mothers. The capacity to receive health services, especially antenatal care (ANC), and child health services is directly correlated with a mother's level of education.<sup>[8]</sup>

These findings are consistent with those of a study done in Nairobi, which likewise linked maternal education to a reduced risk of child malnutrition<sup>[9]</sup> When compared to factors at the maternal, child, and household levels, however, the effect of a mother's degree of education was found to be relatively small in other studies.<sup>[10]</sup>

## CONCLUSION

This study demonstrates the alarming prevalence of child malnutrition in Maheshbathna, Bihar, and highlights the importance of addressing associated risk factors.

Interventions aimed at improving maternal education, reducing poverty, ensuring access to clean water and sanitation facilities, and promoting optimal feeding practices are crucial to combat child malnutrition in this region.

Continued efforts are required to develop and implement effective interventions.

## REFERENCES

1. Danaei G, Andrews KG, Sudfeld CR, et al. Risk factors for childhood stunting in 137 developing countries: A comparative risk assessment analysis at global, regional, and country levels. *PLoS Med.* 2016;13(10):1–18.
2. United Nations Children's Fund (UNICEF). Levels and trends in child mortality [homepage on the Internet]. c2020 [cited n.d.]; p. 56.
3. Jesmin A, Yamamoto SS, Malik AA, Haque MA. Prevalence and determinants of chronic malnutrition among preschool children: A cross-sectional study in Dhaka City, Bangladesh. *J Health Popul Nutr.* 2011;29(5):494–499.
4. Rakotomanana H, Gates GE, Hildebrand D, Stoecker BJ. Determinants of stunting in children under 5 years in Madagascar. *Matern Child Nutr.* 2017;13(4):e12409.

5. Black RE, Victora CG, Walker SP, et al.. Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet*. 2013;382(9890):427–451.
6. Ntenda PAM. Association of low birth weight with undernutrition in preschool-aged children in Malawi. *Nutr J*. 2019;18(1):51.
7. Islam MM. Increasing incidence of infants with low birth weight in Oman. *Sultan Qaboos Univ Med J*. 2015;15(2):e177–e183.
8. Akombi BJ, Agho KE, Hall JJ, Wali N, Renzaho AMN, Merom D. Stunting, wasting and underweight in sub-Saharan Africa: A systematic review. *Int J Environ Res Public Health*. 2017;14(8):863.
9. Abuya BA, Ciera J, Kimani-Murage E. Effect of mother's education on child's nutritional status in the slums of Nairobi. *BMC Pediatr*. 2012;12:80.
10. Frost MB, Forste R, Haas DW. Maternal education and child nutritional status in Bolivia: Finding the links. *Soc Sci*. 2010;60(2):395–407.