



CORRELATION BETWEEN NUTRITIONAL STATUS AND SEVERITY OF PNEUMONIA IN CHILDREN AGED 2 MONTHS TO 5 YEARS

Paediatrics

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ABSTRACT

Background: Pneumonia remains a leading cause of morbidity and mortality among children under five in India. Malnutrition is a well-known risk factor that can influence the severity and outcomes of pneumonia. **Objectives:** 1. To assess the nutritional status of children admitted with pneumonia. 2. To evaluate the correlation between nutritional status and severity of pneumonia. **Methods:** A prospective observational study was conducted over 1 year among 300 children aged 2 months to 5 years admitted with pneumonia to the pediatric ward of RIMS Hospital, Raipur. Nutritional status was assessed using WHO growth standards. Pneumonia severity was classified per WHO criteria: mild, severe, or very severe. Data were analyzed using descriptive statistics, chi-square test, and Spearman correlation. **Results:** Among the 300 children, 40% were underweight, 35% had stunting, and 25% were wasted. Severe and very severe pneumonia was significantly more common in underweight and wasted children ($p < 0.01$). A negative correlation was observed between weight-for-age z-score and pneumonia severity (Spearman $r = -0.42$, $p < 0.001$). **Conclusion:** Undernutrition significantly increases the risk of severe pneumonia in children under five. Early nutritional interventions and close monitoring of at-risk children are essential to reduce pneumonia-related morbidity and mortality.

KEYWORDS

Pneumonia, malnutrition, nutritional status, pediatric, severity, WHO classification

INTRODUCTION

Pneumonia is a major cause of morbidity and mortality among children under five years, especially in low- and middle-income countries. Malnutrition, a prevalent problem in India, compromises immune function and increases susceptibility to infections, including pneumonia. Studies have shown that undernourished children are more likely to develop severe forms of pneumonia, require prolonged hospitalization, and have higher mortality.

This study aimed to assess the nutritional status of children admitted with pneumonia and investigate its correlation with pneumonia severity in a hospital setting near Raipur.

MATERIALS AND METHODS

Study Design: Prospective observational study

Study Period: January 2024 – December 2024

Study Setting: Pediatric ward, RIMS Hospital, Raipur

Sample Size: 300 children aged 2 months to 5 years diagnosed with pneumonia

Inclusion Criteria:

- Children aged 2 months to 5 years
- Clinical diagnosis of pneumonia as per WHO criteria

Exclusion Criteria:

- Children with congenital heart disease, chronic lung disease, or immunodeficiency
- Children with incomplete anthropometric data

Data Collection:

- Anthropometric Measurements:** Weight, height/length, MUAC
- Nutritional Assessment:** WHO growth charts; categorized as normal, underweight, stunted, or wasted
- Pneumonia Severity:** Classified per WHO: mild, severe, very severe

Statistical Analysis:

- Data analyzed using SPSS v25
- Chi-square test for categorical variables
- Spearman correlation to assess the relationship between nutritional status and pneumonia severity
- $p < 0.05$ considered statistically significant

RESULTS

Demographics:

- Total:** 300 children (170 boys, 130 girls)

- Mean Age:** 2.6 ± 1.1 years

Table 1: Nutritional Status Of Children With Pneumonia (n=300)

Nutritional Parameter	Number of Children	Percentage (%)
Underweight (WFA z-score < -2)	120	40
Stunted (HAZ < -2)	105	35
Wasted (WHZ < -2)	75	25
Normal	105	35

Table 2: Severity Of Pneumonia In Children (n=300)

Severity	Number of Children	Percentage (%)
Mild	150	50
Severe	110	36.7
Very Severe	40	13.3

Table 3: Correlation Between Nutritional Status And Pneumonia Severity

Nutritional Status	Severe/Very Severe Pneumonia	Percentage (%)
Underweight	84	70
Wasted	56	75
Normal	21	20

DISCUSSION

This study demonstrates a clear correlation between poor nutritional status and increased severity of pneumonia in children under five. Children who were underweight or wasted had a significantly higher incidence of severe and very severe pneumonia compared to well-nourished peers. These findings are consistent with prior studies, which have shown that malnutrition impairs immune function, reduces lung capacity, and increases susceptibility to severe respiratory infections.

The negative correlation between weight-for-age z-scores and pneumonia severity ($r = -0.42$) suggests that lower nutritional status is directly associated with worse clinical outcomes. Early identification of malnourished children and targeted interventions such as nutritional supplementation, vaccination, and health education could potentially reduce the severity and complications of pneumonia.

This study reinforces the importance of integrating nutritional assessment into routine pediatric care, especially in resource-limited settings. School- and community-based nutritional programs may help reduce the burden of severe pneumonia.

Limitations: Single-center study, dietary intake and socioeconomic

factors were not systematically analyzed, and follow-up for long-term outcomes was not included.

CONCLUSION:

Undernutrition is a major risk factor for severe pneumonia in children under five. Routine nutritional screening and early interventions should be emphasized to reduce pneumonia-related morbidity and mortality.

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