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What is the prevalence of upper respiratory tract pneumococcal carriage in chronically malnourished children aged from birth to five years?

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Background and Objectives: Respiratory-tract infections and invasive disease caused by *Streptococcus pneumoniae* (Spn) are a major cause of childhood deaths worldwide. Colonisation of Spn is a prerequisite to pneumococcal disease and carriage is high in children under 5 years. Chronic malnutrition impairs immune responses, rendering children more susceptible to infection. This is reflected by higher incidence of disease. As studies have suggested the paradigm of chronic malnutrition leading to increased rates of Spn carriage, the aim of this systematic review is to determine the prevalence rate of pneumococcal carriage in the upper respiratory tract of chronically malnourished children under the age of 5 years.

Methods: A systematic search of the existing literature reporting upper respiratory tract prevalence rate of Spn colonisation in malnourished children under the age of five, using Medline, PubMed, Web of Science and Scopus, was carried out. An eligibility criteria was used to include relevant papers.

Findings: The prevalence rate of Spn colonisation in malnourished children under the age of 5 was high. Prevalence at birth ranged from 1.0-2.0% and this greatly increases at 2 months to 53.9-80.0%. Carriage remains high from 3 months to 60 months at 64.1-88.0%. Meta-analysis showed a pooled prevalence of 67.2% in 0-3 months infants (95% CI, 55.6-78.7%), 77.9% in 3-6 months infants (95% CI, 68.1-87.7%) and 77.8% in 6-60 months infants (95% CI, 73.9-81.6%).

Conclusion: In chronically malnourished children, pneumococcal carriage is frequent. However, as data is limited, further research is needed to investigate the aetiology and the strength of this association.

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