

## Insights into Child Malnutrition Dynamics with the Lens of Women's Empowerment in India

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**Abstract :** Child malnutrition is a multifaceted issue that transcends geographical boundaries. Malnutrition not only stunts physical growth but also leads to a spectrum of morbidities and child mortality. It is one of the leading causes of death (~50 %) among children under age five. Despite economic progress and advancements in healthcare, child malnutrition remains a formidable challenge for India. The objective is to investigate the impact of women's empowerment on child nutrition outcomes in India from 2006 to 2021. A composite index of women's empowerment was constructed using Confirmatory Factor Analysis (CFA), a rigorous technique that validates the measurement model by assessing how well-observed variables represent latent constructs. This approach ensures the reliability and validity of the empowerment index. Secondly, kernel density plots were utilised to visualise the distribution of key nutritional indicators, such as stunting, wasting, and overweight. These plots offer insights into the shape and spread of data distributions, aiding in understanding the prevalence and severity of malnutrition. Thirdly, linear polynomial graphs were employed to analyse how nutritional parameters evolved with the child's age. This technique enables the visualisation of trends and patterns over time, allowing for a deeper understanding of nutritional dynamics during different stages of childhood. Lastly, multilevel analysis was conducted to identify vulnerable levels, including State-level, PSU-level, and household-level factors impacting undernutrition. This approach accounts for hierarchical data structures and allows for the examination of factors at multiple levels, providing a comprehensive understanding of the determinants of child malnutrition. Overall, the utilisation of these statistical methodologies enhances the transparency and replicability of the study by providing clear and robust analytical frameworks for data analysis and interpretation. Our study reveals that NFHS-4 and NFHS-5 exhibit an equal density of severely stunted cases. NFHS-5 indicates a limited decline in wasting among children aged five, while the density of severely wasted children remains consistent across NFHS-3, 4, and 5. In 2019-21, women with higher empowerment had a lower risk of their children being undernourished (Regression coefficient=-0.10\*\*\*; Confidence Interval [-0.18, -0.04]). Gender dynamics also play a significant role, with male children exhibiting a higher susceptibility to undernourishment. Multilevel analysis suggests household-level vulnerability (intra-class correlation=0.21), highlighting the need to address child undernutrition at the household level.

**Keywords :** child nutrition, India, NFHS, women's empowerment

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