IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Understanding Child Malnutrition: A Systematic Review of Key Influences

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Abstract

Malnutrition poses a critical public health challenge among children under five in developing nations, particularly in Africa and Asia, contributing to 54% of under-five mortality. This systematic review, encompassing 50 relevant articles from electronic databases such as ProQuest, Scopus, Web of Science, PubMed, and Medline Ovid, identifies key determinants influencing child malnutrition in these regions. The results highlight the significant impact of parental education, early marriages of women, access to clean drinking water, sanitation facilities, household income, and overall socio-economic conditions on the prevalence of malnutrition in children under five. The findings underscore the multifaceted nature of this issue, emphasizing the interconnectedness of various factors. To address child malnutrition effectively, comprehensive and integrated strategies must be implemented, considering the complex web of influences at play in these developing contexts.

Introduction

Child malnutrition stands as a critical global health concern, exerting a profound impact on the well-being of young populations, particularly in resource-limited nations. As children navigate their formative years, adequate nourishment becomes paramount for optimal physical and mental development. The intricate interplay of factors contributing to child malnutrition unfolds against a backdrop of poverty, limited educational opportunities, prevalent infections, and barriers to accessing healthcare services. Despite India's economic strides over the last two decades, malnutrition among children remains a critical issue, underscoring the complex relationship between economic progress and public health outcomes (Khan & Mohanty, 2018). The consequences of child malnutrition extend beyond the individual, affecting communities and hindering a nation's potential for growth. Not only does malnutrition result in physical and mental distress for affected children, but it also imposes a substantial burden on academic achievement, perpetuating a cycle of deprivation that spans generations (Howard et al., 2007).

Globally, child malnutrition encompasses various forms, with undernourishment posing a persistent threat, particularly in low-income countries. The World Health Organization's Global Target 2025 outlines ambitious objectives to address malnutrition, targeting key indicators such as stunting, wasting, and low weight. Against this backdrop, the GHI 2023 sheds light on India's malnutrition landscape, triggering debates and governmental disputes over measurement methodologies and the nuanced nature of malnutrition.

While the GHI positions India at 111th out of 125 countries with a "serious" level of hunger, the NFHS data paints a contrasting picture, indicating improvements in nutritional indicators for children under five. Stunting, wasting, and underweight prevalence have witnessed reductions, challenging the dire narrative portrayed by global indices.

This article delves into the complexities surrounding child malnutrition in India, exploring the discrepancies between global assessments and national data. Beyond the GHI rankings, it emphasizes the need for a nuanced understanding of malnutrition, acknowledging the multifaceted influences that contribute to stunting, wasting, and child mortality. By synthesizing insights from diverse global contexts and India-specific studies, this systematic review aims to unravel the intricacies of child malnutrition, offering a comprehensive perspective crucial for shaping targeted interventions and policies to secure a healthier future for India's children. This systematic review embarks on a comprehensive exploration, drawing insights from a wealth of global and India-specific studies, including data from the National Family Health Survey (NFHS) and the Global Hunger Index (GHI) 2023.

The statement of the problem in this literature review paper is rooted in the complexities surrounding child malnutrition in India, marked by discrepancies between global assessments, such as the Global Hunger Index (GHI) 2023, and national data from the National Family Health Survey (NFHS). The contrasting portrayals of India's malnutrition landscape have triggered debates and governmental disputes over measurement methodologies, raising questions about the nuanced nature of malnutrition in the country. The need for a more in-depth and nuanced understanding of the factors influencing child malnutrition is evident, considering the improvements in nutritional indicators indicated by NFHS data, which challenge the dire narrative presented by global indices.

The objectives of this systematic review are to unravel the intricacies of child malnutrition in India by synthesizing insights from diverse global contexts and India-specific studies. By conducting a comprehensive exploration, the review aims to offer a nuanced perspective crucial for shaping targeted interventions and policies to address and alleviate the multifaceted influences contributing to stunting, wasting, and child mortality in India.

Study Methods

To comprehensively understand the influences impacting child malnutrition, a systematic review was conducted using established search methods. This review targeted reputable databases—such as PubMed, Scopus, and Google Scholar—employing a diverse set of keywords like "child malnutrition," "key influences," and related terms. Stringent inclusion criteria were applied, focusing on empirical research, reviews, and meta-analyses within a specified timeframe to ensure relevance. Rigorous screening processes were undertaken to assess titles, abstracts, and full texts against these criteria, omitting duplicates, non-English studies, and irrelevant articles. Quality assessments of selected studies were conducted using recognized appraisal tools to guarantee the reliability of included literature. Data extraction encompassed essential details from studies, allowing for comprehensive synthesis and thematic analysis to discern patterns in the influential factors contributing to child malnutrition. The systematic review adhered to preferred reporting guidelines to ensure transparency and replicability in both search methods and findings' presentation.

Discussion

These studies collectively highlight the intricate relationships between different key factors such as education, socio economic conditions, child malnutrition, child marriage, diet and malnutrition. The focus on child marriage determinants in Indonesia by Rumble et al. (2016) reveals associations with lower education levels, rural residence, and impoverished households, emphasizing the need for nuanced policy interventions. Weitzman's (2017) exploration in Peru establishes a causal link between increased education and improved maternal health, urging future research to generalize findings and assess long-term effects across countries. Vikram and Vanneman's (2020) findings on the positive correlation between maternal education and child health outcomes in India reinforce the importance of multifactorial frameworks. Pillai and Maleku's (2019) emphasis on stunting in India stresses the significance of maternal factors, advocating for a "strength-based" approach to public health and tailored interventions for specific stages of stunting. Duarah's (2023) study on educational disparities among scheduled tribes in Central India underlines geographical variations and emphasizes the need for a concentrated examination of regional causes. Sebastian

Vollmer et al. 's (2017) comprehensive study across low- and middle-income countries highlights the equal importance of maternal and paternal education in reducing childhood undernutrition, urging policymakers to consider both dimensions in intervention strategies. Anjali's (2013) investigation into tribal education in Odisha and Rani, Rajani, and Neeraja's (2011) study echo the positive impact of education on tribal health, especially maternal and child health.

In the realm of health, Kumar et al. (2022) shed light on the positive impact of the Integrated Child Development Services (ICDS) scheme on pregnancy-related nutrition and health counseling in Palghar, Maharashtra. The study emphasizes the importance of counseling services and the need for tailored approaches in low-income settings. Rajpal et al. (2021) delve into maternal dietary diversity during lactation in Palghar, underlining the significance of interventions targeting dietary habits and improved food accessibility. Chaurasia et al.'s (2019) broader perspective examines child malnutrition in Maharashtra through the National Family Health Survey (NFHS-4), identifying key factors such as household wealth, education, and regional disparities. De and Chattopadhyay (2019) focus on developmentally challenged children in West Bengal, providing insights into the impact of socio-economic factors and the need for early interventions in rural areas. G.C. et al.'s (2023) extension to Nepal utilizes decomposition analysis to understand maternal and child health service inequality, recommending improvements in healthcare infrastructure and increased autonomy for local bodies. Tigga and Sen (2016) address the scarcity of Indian studies on maternal BMI and child nutritional status, emphasizing the association between the two and the importance of community-level interventions. JOSE and HARI's (2015) comprehensive analysis of child health determinants in India urges policymakers to prioritize child needs for economic growth, exploring various interventions, including water and sanitation improvements. Ghosh and Varerkar (2019) focus on the Vikramgad block in Palghar identifies undernutrition factors among tribal children and proposes interventions. Rohisha et al. (2019) focus on anemia prevalence among tribal women in Kerala, emphasizing the need for interventions to improve reproductive-age women's health. Tagade (2012) broadens the perspective to Maharashtra's tribal-dominated areas, addressing food insecurity and identifying poverty, agricultural challenges, and educational disparities as contributors.

Charlotte Lee et al.'s (2021) cross-sectional study in rural India highlights significant associations between improved household environmental factors and reduced odds of stunting in children under five. Using multiple logistic regression, the study emphasizes the need for interdisciplinary solutions to address childhood malnutrition in vulnerable communities, urging a shift from nutrition-specific approaches. In Benin, Lokossou et al. 's (2021) qualitative approach explores socio-cultural beliefs influencing feeding habits among mothers and children, recommending educational interventions. Akshay and Sarita's (2019) qualitative study in Haryana sheds light on prevailing socio-cultural norms affecting women's perspectives on pregnancy, childbirth, and child care, emphasizing the significance of education in improving women's health-seeking behaviors and advocating for interventions that involve family members. Sindhi's (2012) exploration of empowering tribal women in India through various training programs underscores the importance of skill development for rural women's empowerment, recommending government and civil society collaboration. Tette et al.'s (2016) study in Ghana focuses on maternal profiles and social determinants of malnutrition in children, aligning with Millennium Development Goals (MDGs), emphasizing the need for preventive efforts and implying a changing landscape in malnutrition dynamics. Kochupurackal Ulahannan et al.'s (2023) analysis of child undernutrition among Adivasi communities in north Kerala employs a syndemic framework, identifying structural inequalities, health conditions, and hygiene practices as complex contributors. The study underscores the importance of addressing social determinants, water, sanitation, and hygiene for improving Adivasi child health. In Bangladesh, Ireen et al.'

Vollmer et al. (2014) highlighted the minimal association between macroeconomic growth and reductions in childhood undernutrition in low-income and middle-income countries, advocating for direct investments in health and nutrition over a growth-mediated strategy. Kanjilal et al. 's

(2010) focus on the Indian context emphasized the persistent issue of childhood malnutrition despite economic progress, underscoring the role of household socio-economic conditions as crucial determinants. Vilar-Compte et al.'s (2021) systematic literature review examined the global relationship between urban poverty and access to a healthy diet, stressing the detrimental impact on nutritional status, particularly among low-income populations, and urging policies addressing food accessibility, affordability, and nutritional literacy in urban areas. Subramanian et al. 's (2006) insights into economic disparities within Scheduled Castes and Scheduled Tribes in India revealed an increase in economic inequality during the post-economic reforms period, calling attention to the need for targeted initiatives to uplift socially and economically disadvantaged sub-castes. Lal's (2021) exploration of health disparities faced by indigenous populations in India underscored the impact of socioeconomic status on health outcomes, recommending policies to address pervasive inequalities, improve healthcare access, and reduce discrimination. Chavan's (2016) investigation into tribal communities in Thane District highlighted an imbalance in social, economic, and cultural aspects, emphasizing the dependence of tribal livelihoods on natural resources and calling for a focused approach to tribal development. Ballabh and Batra's (2015) overview of socio-economic conditions of tribal populations in central India suggested a need for development efforts respecting tribal culture, involving participatory decision-making, and addressing root causes of poverty. P S's (2019) qualitative study on Baiga tribal children identified poverty, lack of education, poor hygiene, and traditional practices as contributing factors, recommending interventions focusing on improving socioeconomic status, education, and healthcare access. Meshram et al. 's (2018) examination of socio-economic status of farm and non-farm tribal families in Gadchiroli district revealed poverty, illiteracy, and lack of infrastructure as key challenges, emphasizing the need for policy interventions to improve living conditions and promote sustainable agriculture. Mukhopadhyay and Chakraborty's (2020) exploration of temporal changes in wealth inequalities in child nutrition across major states in India, using NFHS data, found a reduction in wealth inequalities, recommending improvements in access to healthcare, sanitation, and education for the poorest households.

In the context of child malnutrition, various studies underscore the multifaceted nature of this global health concern. Surve et al. (2022) demonstrate the positive impacts of targeted interventions in Palghar district, Maharashtra, emphasizing the effectiveness of health and nutrition education sessions while advocating for longer-term perspectives. Meshram et al. 's (2012) cross-sectional survey in tribal areas of Maharashtra highlights the prevalence of underweight, stunting, and wasting among pre-school tribal children, emphasizing the need for region-specific interventions based on determinants such as low birth weight and poor maternal education. Victora et al.'s (2008) literature review explores the long-term implications of undernutrition, linking it to shorter adult height and reduced economic productivity, emphasizing interventions during critical periods of pregnancy and childhood. The Joint Child Malnutrition Estimates 2021 (UNICEF/WHO/World Bank Group) offers a global perspective on the persistent prevalence of stunting and the increasing prevalence of wasting, aggravated by the COVID-19 pandemic. Bhutta et al.'s (2013) review stresses the importance of continued investment in nutrition-specific interventions, while Wachter et al.'s (2015) case study on Maharashtra highlights the success of a multi-sectoral approach and community engagement. Varghese et al.'s (2022) ecological analysis using NFHS data underscores a slowdown in stunting reduction and a rise in child overweight in India, emphasizing the need for inter-ministerial efforts. Against the backdrop of these localized insights, the Global Nutrition Report of 2020 sets ambitious targets, including a 40% reduction in child stunting by 2025, while acknowledging the challenging goal of achieving Zero Hunger by 2030, with an estimated 660 million people still facing hunger. This emphasizes the imperative for a sustained and comprehensive effort to address the root causes of malnutrition, recognizing its intricate links with poverty, inequality, and broader societal challenges. Integrating both localized and global perspectives is crucial for developing context-specific strategies that effectively tackle the complex dimensions of child malnutrition.

Findings

Collectively, the extensive body of research on child malnutrition reveals nuanced interconnections between various determinants. Studies from diverse regions highlight the impact of socio-economic conditions, education, and regional disparities on child health outcomes. Insights from India, Indonesia, and Peru underscore the pivotal role of education in maternal and child health, with Vikram and Vanneman's (2020) findings emphasizing the positive correlation between maternal education and child health outcomes in India. Regional studies, such as those in Palghar, Maharashtra, emphasize the effectiveness of targeted interventions, like the Integrated Child Development Services (ICDS) scheme (Kumar et al., 2022). Additionally, research in tribal areas of Maharashtra (Meshram et al., 2012) and Central India (Duarah, 2023) sheds light on regional variations and the need for tailored interventions.
Further insights from studies in Ghana (Tette et al., 2016) and Kerala (Rohisha et al., 2019) delve into maternal profiles and socio-cultural determinants, aligning with Millennium Development Goals (MDGs) and emphasizing the changing landscape in malnutrition dynamics. The studies echo the importance of preventive efforts and structural interventions. The importance of household environmental factors in reducing childhood stunting is highlighted in a study in rural India (Lee et al., 2021), emphasizing the need for interdisciplinary solutions and a departure from nutrition-specific approaches.

Moreover, studies from diverse contexts, such as Benin (Lokossou et al., 2021), Haryana (Akshay & Sarita, 2019), and Ghana (Tette et al., 2016), delve into socio-cultural beliefs, norms, and community-level factors influencing maternal and child health-seeking behaviors. These findings underline the significance of cultural contexts and advocate for interventions that involve family members. The studies collectively emphasize the need for comprehensive, context-specific strategies that consider regional variations and integrate cultural nuances to effectively address the complex dimensions of child malnutrition.

Conclusion

In summary, this systematic review sheds light on the complex factors contributing to child malnutrition in India, exploring education, health, social status, and economic conditions. The discrepancies between global indices like the Global Hunger Index (GHI) and national data underscore the need for context-specific assessments. From successful interventions to challenges like child undernutrition, the findings emphasize the necessity of sustained, collaborative efforts. The review calls for holistic, inter-ministerial approaches, considering not only nutritional factors but also broader determinants, providing valuable insights for crafting effective policies and interventions to ensure a healthier future for India's children.

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