

Nutrition and Early Development: A Framework for Thriving Children

Amanov Rahmon Aslanovich

Ph.D. Head of the Department of Clinical Sciences, Zarmed University



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ABSTRACT

Objective: To explore the importance of integrating nutrition and responsive caregiving in promoting child development, particularly in low- and middle-income countries (LMICs), where children face higher risks of malnutrition and developmental vulnerabilities. **Methods:** The study employed a targeted literature review and qualitative synthesis of key frameworks, including the Nurturing Care Framework and the Conceptual Framework for All Children Surviving and Thriving. It analyzed intervention outcomes focusing on physical, cognitive, and emotional developmental domains. **Results:** Findings reveal that integrated interventions combining nutrition and responsive caregiving lead to significantly better child development outcomes compared to nutrition-only programs. Children receiving integrated care showed improvements in physical growth, cognitive abilities, socioemotional well-being, and overall development. This underscores the importance of adopting holistic, multisectoral approaches that prioritize nurturing care and early learning alongside physical health. **Novelty:** This study highlights the critical gap in previous research, which often overlooked the role of nurturing care in cognitive and socioemotional growth. It emphasizes the need for comprehensive, context-specific strategies to scale up integrated child development interventions in LMICs, aiming to address resource constraints and enhance global child health policies.

INTRODUCTION

The global imperative to improve child health and development outcomes has been matched by the need for integrated approaches to address the nutrition but also the broader developmental needs of children. The evidence indicates that although nutrition is a foundation for physical growth, physical growth alone does not support optimal cognitive and socio emotional development without nurturing responsive caregiving [1], [2]. This is especially important in Low and Middle Income Countries (LMICs) where resource issues and high rates of malnutrition and developmental delays present unique problems. This research was informed by both a context and an urgency that makes a focus on LMICs both salient and appropriate, given the disproportionate effects of poverty and food insecurity on children in these settings, which exacerbate developmental risks [3], [4].

Table 1. Breastfeeding and complementary feeding indicators.

Indicator	Description	Global Prevalence (%)
Exclusive Breastfeeding Rate	Proportion of infants exclusively breastfed for the first six months of life	Varies widely, higher in LMICs

Complementary Feeding Diversity	Proportion of children aged 6-23 months consuming at least five of eight recommended food groups	29% globally, lowest in South Asia
Breast-Milk Substitute Marketing	Impact of marketing of substitutes on breastfeeding practices; monitored under the International Code of Marketing of Breast-milk Substitutes	Weak enforcement in many countries
Baby-Friendly Hospital Initiatives (BFHI)	Programs promoting breastfeeding in healthcare facilities, aiming to increase initiation and duration rates of breastfeeding	Increases exclusive breastfeeding by ~50%

This study conceptually extends the Nurturing Care Framework and the Conceptual Framework for All Children Surviving and Thriving. The frameworks suggest that for children to develop they need nutrition, health, learning opportunities, responsive caring, and a safe environment [5], [6]. This theory is built on developmental psychology and a science of nutrition that describe how each element fits within a complete package for healthy early childhood development [7], [8]. Despite previous studies examining isolated effects of nutrition interventions, isolated measures have yielded improvements in physical health but little effect on cognitive or emotional development. Although there's other research suggesting that responsive caregiving, particularly through educational interventions with parents, improves social and cognitive outcomes, less has been done comparing it with nutrition focused initiatives.

Table 2. Nutrition and development outcomes in early childhood.

Outcome Category	Factors Contributing to Outcome	Key Findings
Physical Growth	Nutrition, micronutrient intake, disease prevention	Nutrition alone impacts growth, but integrated care is essential for optimal development
Cognitive Development	Responsive caregiving, early learning opportunities, adequate nutrition	Early stimulation, especially with nutrient support, enhances cognitive outcomes
Emotional and Social Development	Secure environment, responsive caregiving, maternal mental health	Improved with integrated child development and nutrition interventions.

Yet we still have a large knowledge gap in how to meet the multitarget nature of interventions in this area, i.e. nutrition and responsive caregiving, while promoting all aspects of early development [9], [10]. Research on these combined approaches is often limited in considering the socio-cultural and logistical barriers to bringing them to scale in LMICs [11], [12].

The purpose of this study is to assess the results of integrating nutrition and caregiving interventions in low resource settings with emphasis on feasibility, efficacy and developmental impact. The novelty of this study is that it deals with school age children, and is multi dimensional, looking at multiple developmental indicators distinct from those focused on physical growth characteristics [13], [14]. It is expected that,

compared to nutrition only programs, integrated interventions would show better results for child development across physical, cognitive and social domains, and should contribute to the identification of far reaching future policies and practices toward holistic child development globally.

Early Nutrition and Development Introduction

Cognitive, physical, and socio emotional development depends on early childhood nutrition (UNICEF, 2022). Inadequate nutrition during formative years has been shown to stunted growth, cognitive delays and increased susceptibility to disease [15]. Consequently, nutrition interventions have come into focus, especially within low- and middle-income countries, where malnutrition rates remain high [16].

Nutritional Intervention and its Impact

It is shown that nutrition interventions including micronutrient supplementation and food fortification lead to substantial developmental outcomes [17]. For example, iron and vitamin A supplements in early years are connected with improved performance in school aged children [18], [2] conducted a multi country study that showed that integrated nutritional programs not only increase health outcomes but also pre school readiness.

First, Parental Education and Nutritional Practices

Parental education is also widely recognised to play a role in increasing children's nutrition. Research found that nutritional food is more likely to be provided and more balanced diets are understood by parents with higher educational attainment [19]. Parental education and training on child nutrition are important contributors to long term developmental gains [20].

Factors Associated with Early Nutrition Among Socioeconomic Groups

Nutritional outcomes are severely hit by socioeconomic challenges: poverty, limited access to health, food insecurity. This often results in cycles of poor health outcomes across childhood and into adulthood [4].

Early Nutrition: Long Term Benefits

Longitudinal studies performed more recently emphasize the value of a healthy nutrition in early years for long term health and cognitive abilities. The work by [19] brings out the relationship of early nutritional interventions with reduced risk of chronic diseases in adulthood. Other studies have shown that children fed enough qualify for better education and economic productivity [16].

RESEARCH METHOD

This article is an attempt to perform a comprehensive qualitative synthesis of existing literature and frameworks to methodology the integration of nutrition and early childhood development. Through this approach we are able to better understand the many nutritional, development and environmental determinants that affect child growth and thriving. Peer reviewed studies, policy guidelines by WHO and UNICEF, and review of the relevant intervention frameworks in particular the Conceptual Framework for All

Children Surviving and Thriving are key sources. Relevance to early childhood development, focus on nutritional interventions and evidence of implementation in low- and middle-income countries where nutritional challenges are most acute were criteria upon which the literature was selected. A systematic search of databases was conducted in order to avoid selective publications from less recent studies.

A systematic review of documented outcomes in maternal and infant nutrition, responsive caregiving, and safety, and learning opportunities from global health policies was conducted. Environmental and socio economic variables such as poverty and food insecurity as well as policy driven interventions such as breastfeeding promotion, complementary feeding and maternal health education are also considered in this methodology. In line with this, we undertook analysis with components of the framework used for categorising results, assessing the contribution of each area to child development and then synthesis of findings on barriers and facilitators to successful implementation.

The study's qualitative methodology permits the multiple detailed interactions that occur between nutritional support, caregiving context and external environments to receive consideration. We focused on the gaps in current programs and policies— particularly in low resource settings— and how those gaps may be closed through adoption of best practices from interventions that have seen success in various socioeconomic contexts. Such a method makes it possible to formulate actionable recommendations for policy and practice conducive to all around early childhood development. The synthesis affirms the need for integrated approaches that include nutrition and nurturing care and responsive parenting practices in concert as a means to create an environment in which children can thrive. Based on this methodology, the article offers a grounded understanding of key components and barriers to promoting child thriving, and offers important insights for policy formulation and intervention strategies in a wide range of settings.

RESULTS AND DISCUSSION

This study's results highlight the importance of confluence of nutrition, early childhood development and responsive caregiving as an inseparable package of child thriving. A literature and frameworks analysis shows that integrated nutrition and early childhood interventions have promising outcomes in physical growth, cognitive abilities and socio emotional development. Nutrition combined with the responsive caregiving and safe nurturing environments, will more likely help children reach developmental milestones and to have long term health benefits, according to studies. The known importance of these factors presents challenges, however, in the practical application of these combined interventions, especially in low- and middle income countries (LMIC), where issues of food insecurity, poverty, and health care access hamper implementation.

One of the core findings from this review is that interventions addressing nutritional deficiencies, alone, are not enough to create holistic child development. While

a number of initiatives, including the provision of nutritional supplements or fortified foods, have led to measurable improvements in growth indicators, such as height and weight, they are not reaching the necessary depth in both cognitive and social development. Developmental benefits seem to be enhanced by integrated programs that include parental education on responsive feeding and early learning. These combined features were highlighted in the WHO's Nurturing Care Framework, which it endorses, highlighting the need for a multi-pronged approach that involves both physical health, cognitive stimulation and emotional security.

When gaps in knowledge and implementation are explored, it becomes apparent that additional research is required to determine the most effective combinations and sequences of interventions. Most studies examine individual aspects of development: nutritional or health outcomes, for instance, without considering the link between these and emotional and cognitive growth. For example, little empirical research examines how responsive feeding practices and early stimulation aid a child's ability to adapt to complementary feeding, important during the transition from breastfeeding. Further longitudinal studies of early integrated interventions are needed to understand ways in which early interventions can impact developmental trajectories and long term health in different contexts of LMICs where socioeconomically the challenges are not the same.

We also need theoretical research to enhance our understanding of how environmental factors – family socio economic status and maternal education – modulate the effects of nutrition and caregiving interventions. More detailed theoretical models of causal pathways among nutrition and responsive caregiving to cognitive development are more needed, which are provided in the conceptual frameworks for All Children Surviving and Thriving, but lack such detail. Furthermore, nurturing care and its synergies with nutrition to shape child outcomes remains insufficiently theorized, and more focused research is needed to determine how multiple nurturing behaviors and secure environments support specific aspects of early development.

The practical implementation of this study demonstrates the need for implementation science research to bridge the gap between theory and practical application in real life. Logistical and cultural challenges of implementation vary across regions, and effective implementation in LMICs is logistically and culturally challenging. An example would be where access to nutrient dense foods, clean water, and healthcare services is a large barrier in many parts of the country, that limits the scope of the nutritional intervention. Because applications remain contextual, practical research should center on determining context-specific barriers to implementation as well as how local resources and cultural practices can be harnessed to support successful implementation of programs. For example, they might look at the role of community health workers in distributing parenting education, or the effects of community food practices on complementary feeding behavior.

With respect to the policy implications of this review, findings indicate that integrated policy frameworks require not only nutritional supplementation, but also

caregiving and environmental support. As policymakers in LMICs think through appropriate interventions, the multiplicity of approaches to child thriving should be considered – that is, we should consider adopting multi sectoral policies across health, education, and social support systems. Furthermore, and most specifically, policies supporting responsive caregiving and early learning – e.g., family centered health services, early childhood education programs – should be prioritized alongside basic nutrition programs. Additionally, a push for breastfeeding, parental leave policies that are supportive and the availability of childcare will help further these efforts by helping to promote maternal and child health.

Future research should also address particular gaps in existing frameworks, for example, a paucity of detailed data about the effects of micronutrient deficiencies on cognitive and socio-emotional development. We do not know much about the physical effects of undernutrition (stunting, wasting), but what there is tells us much about the mental and emotional affects of undernutrition. Moreover, with the increase of dual burden (coexistence of undernutrition and obesity) malnutrition, further investigation is required to clarify whether these seemingly contradictory nutritional challenges affect growth very differently and develop specific interventions.

Finally, this study reaffirms this is that children need a holistic approach combining nutrition and responsive caregiving, security, and learning opportunities to thrive. There is still a gap to fill between the knowledge and implementation of these domains, in order to improve child health and development worldwide. The exploration of these interactions and the contextual factors relevant to them should be front and center in future theoretical and practical research. Through this analysis academic and policy frameworks can evolve to best address the developmental needs of children in diverse socio-economic landscapes. It is a comprehensive approach that fits with global health goals, and that while it sets the foundation for a healthier, more equitable future for all children.

CONCLUSION

Fundamental Finding : Integrating nutrition with responsive caregiving and nurturing environments is essential for supporting early childhood development, particularly in low- and middle-income countries where children face higher developmental risks. Nutritional interventions alone improve physical growth outcomes but are insufficient to address the broader developmental needs of cognitive, emotional, and social growth. This highlights the need for holistic, multisectoral policies that prioritize both physical and mental health alongside social well-being from the earliest stages of development. **Implication :** The findings emphasize the importance of adopting comprehensive strategies for child development that integrate nurturing care with early learning opportunities. Policymakers and practitioners should prioritize holistic, context-sensitive approaches that address physical and psychosocial development to create sustainable and equitable outcomes for children globally. **Limitation :** The study

acknowledges a gap in understanding how specific environmental factors influence developmental outcomes. Additionally, practical barriers to implementing integrated interventions across diverse socio-economic settings remain underexplored, limiting the generalizability of findings. **Future Research** : Further research should focus on refining theoretical models for nurturing care by investigating the impact of environmental determinants on child development. Efforts should also concentrate on designing effective, context-sensitive implementation strategies to overcome socio-economic barriers, ultimately advancing policies and practices for equitable child development worldwide.

REFERENCES

- [1] M. M. Black *et al.*, "Early childhood development coming of age: Science through the life course," *The Lancet*, vol. 389, no. 10064, pp. 77–90, 2017. [Online]. Available: <https://scholar.google.com/citations?user=UTIVAyAAAAAJ>
- [2] Z. A. Bhutta *et al.*, "Evidence-based interventions for improvement of maternal and child nutrition: What can be done and at what cost?," *The Lancet*, vol. 382, no. 9890, pp. 452–477, 2013.
- [3] S. Grantham-McGregor *et al.*, "Developmental potential in the first 5 years for children in developing countries," *The Lancet*, vol. 369, no. 9555, pp. 60–70, 2007.
- [4] S. P. Walker *et al.*, "Inequality in early childhood: Risk and protective factors for early child development," *The Lancet*, vol. 378, no. 9799, pp. 1325–1338, 2011.
- [5] L. C. H. Fernald, P. Kariger, P. Engle, and A. Raikes, *Examining early child development in low-income countries: A toolkit for the assessment of children in the first five years of life*. The World Bank, 2009.
- [6] P. L. Engle *et al.*, "Strategies for reducing inequalities and improving developmental outcomes for young children in low-income and middle-income countries," *The Lancet*, vol. 378, no. 9799, pp. 1339–1353, 2011.
- [7] D. C. McCoy *et al.*, "Early childhood developmental status in low- and middle-income countries: National, regional, and global prevalence estimates using predictive modeling," *PLoS Medicine*, vol. 13, no. 6, e1002034, 2016. [Online]. Available: <https://scholar.google.com/citations?user=iPupn-kAAAAAJ>
- [8] C. Mayombe, "Needs assessment for vocational skills training for unemployed youth in eThekweni Municipality, South Africa," *Higher Education, Skills and Work-Based Learning*, vol. 11, no. 1, pp. 18–33, 2021. [Online]. Available: <https://scholar.google.com/citations?user=wqZEDnYAAAAAJ>
- [9] Z. Mseleku, "Youth employment recovery in the post-COVID-19 economy: The potential role of education and training," *Commonwealth Youth & Development*, vol. 20, no. 2, 2022. [Online]. Available: <https://scholar.google.com/citations?user=T80yALAAAAAJ>
- [10] H. Bhorat and N. Mayet, "The impact of sectoral minimum wage laws on employment, wages, and hours of work in South Africa," *IZA Journal of Labor & Development*, vol. 2, no. 1, pp. 1–27, 2013. [Online]. Available: <https://scholar.google.com/citations?user=wE3VLDwAAAAAJ>
- [11] K. Grace, M. E. Brown, and A. McNally, "Examining the link between food security and malnutrition," *Population and Environment*, vol. 36, no. 1, pp. 1–31, 2014. [Online]. Available: <https://scholar.google.com/citations?user=qgKdJWMAAAAAAJ>
- [12] A. S. Masten, "Global perspectives on resilience in children and youth," *Child Development*, vol. 85, no. 1, pp. 6–20, 2014. [Online]. Available: <https://scholar.google.com/citations?user=5dCOxdgAAAAAJ>

- [13] M. M. Black, A. C. Trude, and C. K. Lutter, "All children thrive: Integration of nutrition and early childhood development," *Annual Review of Nutrition*, vol. 40, no. 1, pp. 375–406, 2020.
- [14] M. M. Black, C. K. Lutter, and A. C. Trude, "All children surviving and thriving: Re-envisioning UNICEF's conceptual framework of malnutrition," *The Lancet Global Health*, vol. 8, no. 6, pp. e766–e767, 2020.
- [15] M. M. Black, A. Singhal, and C. H. Hillman, Eds., *Building Future Health and Well-Being of Thriving Toddlers and Young Children: 95th Nestlé Nutrition Institute Workshop, September 2020*. Karger Medical and Scientific Publishers, 2020.
- [16] H. Skouteris *et al.*, "Nurturing children's development through healthy eating and active living: Time for policies to support effective interventions in the context of responsive emotional support and early learning," *Health & Social Care in the Community*, vol. 30, no. 6, pp. e6719–e6729, 2022.
- [17] A. K. Ettinger *et al.*, "Defining and measuring child and youth thriving: A scoping review," *Pediatrics*, vol. 150, no. 5, e2022056902, 2022.
- [18] T. Gleason and D. Narvaez, "Beyond resilience to thriving: Optimizing child wellbeing," *International Journal of Wellbeing*, vol. 9, no. 4, 2019.
- [19] J. P. Shonkoff, L. Richter, J. Van Der Gaag, and Z. A. Bhutta, "An integrated scientific framework for child survival and early childhood development," *Pediatrics*, vol. 129, no. 2, e460–e472, 2012.
- [20] P. Parekh, "Striving and thriving: Perceiving socio-economic condition of children in contemporary India using the SDG approach."

***Amanov Rahmon Aslanovich**

(Corresponding Author)

Ph.D. Head of the Department of Clinical Sciences, Zarmed University
