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Research Article

Economic Growth and Child Malnutrition in India: An Analysis of National Demographic and Health Survey

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Abstract

The relationship between economic growth and also child malnutrition in India is multifaceted issues which demand investigation. Economic growth is associated with improved reduction in poverty and public health as it directly impacts child malnutrition. This study utilises the data from “National Health Profile 2022”, “Country Office Annual Report 2023 by UNICEF” and “National Family Health Survey (NFHS - 5), 2019–21” to examine the economic growth which influenced rates of child malnutrition over the past decades. While economic growth is an important driver of improved nutritional outcomes, it must be accompanied by targeted social policies that address the underlying determinants of malnutrition, such as education, healthcare access, and income distribution. The study controls the range of children, regional factors and household wealth under a crucial determinant of child nutrition. The study findings have important implications for policymakers, highlighting the need for targeted interventions that complement economic growth with focused public health strategies to achieve significant reductions in child malnutrition.

Keywords: Economic Growth, India, Malnutrition, Underweight, Stunting, Wasting, Healthcare, Overweight, Development.

INTRODUCTION

Indian rapid economic growth for the past few decades has transformed the socio-economic landscape lifting millions of poverties while improving the living standards of the country. Despite the gains, child malnutrition remains a challenge with significant implications for economic development and public health. malnutrition has severe consequences for morbidity and mortality, rescue poverty and impaired cognitive development in adulthood. The relationship between malnutrition and economic growth where growth improves access to education, healthcare and food as it translates a better nutritional outcome. Several factors automatically translate for better nutritional outcomes. Several factors including inadequate public health, social disparities and income inequality help to hinder economic growth. Through examining trends in malnutrition rates alongside economic indicators, economic growth has impacted child nutrition and identified the key factors that influence this relationship. This is important

for implementing the policy decision to achieve the United Nations Sustainable Development Goal of ending malnutrition and hunger by 2030 Figure 1.

The study controls the range of children, regional factors and household wealth under a crucial determinant of child nutrition. The study also contributes to the broader literature on the economic determinants of public health, providing insights into how economic policies can be designed to promote equitable health outcomes. The association between other measures and economic growth of human deprivation is the outcomes of child nutrition.

The linkage between child malnutrition and Economic growth: A Conceptual Framework

The economic growth of India has impacted the nutritional factors of children and has changed the demographic condition of children. Different policies have been implemented to provide nutritional support for the economic growth of India. Various types of infections affecting the health of children require the engagement of

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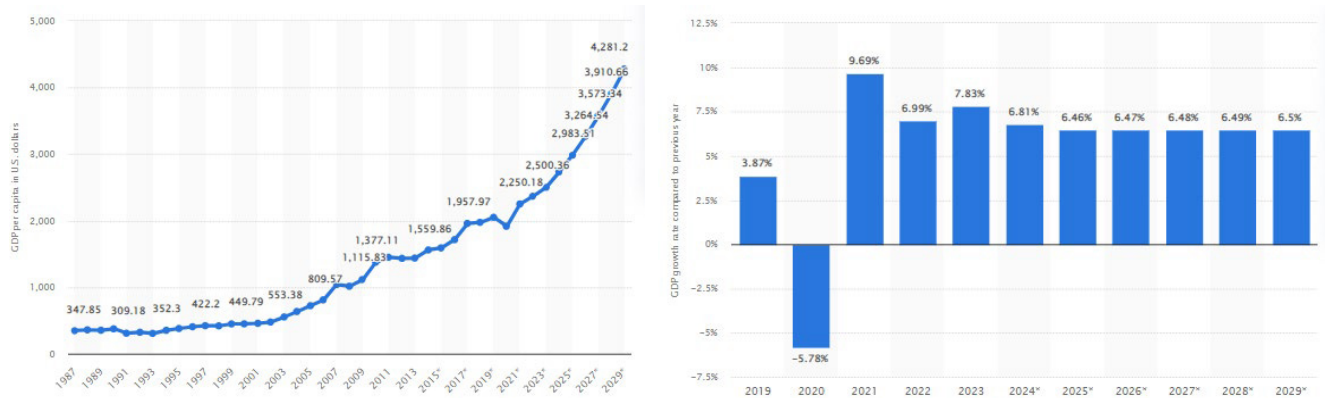


Figure 1: Growth rate of GDP per capita and Growth rate of GDP.

financial support and an increase in the direct investment of the government for the development of the economic condition of India (Gulati & Roy, 2021). The economic growth and the malnutrition rate of children are closely related to each other as the food supply rate increased after the economic growth of India. Various types of Industrial developed and service-related works are available with the development of the economic condition of India, improving the overall nutritional level of the Indian people (Basargekar et al., 2021). Due to the development of the economic condition of India, household income become stable and the nutritional issues among children have decreased. The healthcare factors among the children reach the highest level with the practices of economic stability in India Figure 2.

The increment rate of the Indian people helps to increase their economic condition resulting in the employment rate of the Indian people. Along with this, the increasing rate of economic resources among the Indians affected their food security and reduced the malnutrition issues among children. Some negative impacts are there after the economic growth including income inequality among the Indians creating different types of societal discrimination among the families (Rahman et al., 2020). Due to the rapid growth of industrialisation, and urbanisation among Indians, the traditional food system has faded and the demands of processed foods within the market hamper the nutritional factors among children (Ray & Sarangi, 2021). Apart from that, environmental degradation reduces the accessibility of pure water and nutrient-based foods, impacting the nutritional effect on children. Commercialisation of the food system as the result of economic growth hampers the nutritional base of foods and children are the most affected portion of society of those malnutrition factors.

EMPIRICAL LITERATURE

As per the studies of (Subramanyam & Narayana, 2023), different cultural practices along with the “taboos” and “avoidances” of foods create the insufficiency among Indian

children. The majority of tribal people and their food habits impact the issues related to the nutritional values among Indian people. The Government initiative of “National Food Security” created the food security and distribution system of the public food supply system. (Saxena et al., 2024), poor sanitation system and the hygiene among the deprived classes of urban and due to the lack of sanity them create a lower rate of physical strength and malnutrition among children. An inadequate healthcare system among children creates malnutrition and causes the aggravation of diseases and mortality rates among children.

As opined by (Banerjee et al., 2023), different types of socio-economic factors impact the nutritional level of children. Risk factors related to the life satisfaction and mental happiness of Indian people deepens upon the economic growth. The economic factors create discrimination, resulting in obesity and over nutrition among children.

DATA AND METHODOLOGY

The study focuses on analyzing the information related to the nutritional status for national representation of the National Health Profile published by the Government of India starting from the year 2019 and ending in the year 2024. Based on these 5 years' reports, an idea is generated that has led the researcher to understand the suitable departments present within the Indian government that can provide demographic and health survey-related reports of children and adolescent's people. The Annual report of the Country Office of 2023 that is published by the UNICEF India branch is cultivated properly.

Depending on the data released, the 2019 to 2021 reports of the National Family Health Survey and the reports generated annually by the National Ministry of Women and Children welfare, the researcher has focused on analysing the on-going pattern of children malnutrition (Kumar et al., 2021). Depending upon the divisional degrees generated from the NDHS-based data that are collected by the researcher, different features are found as the navigating

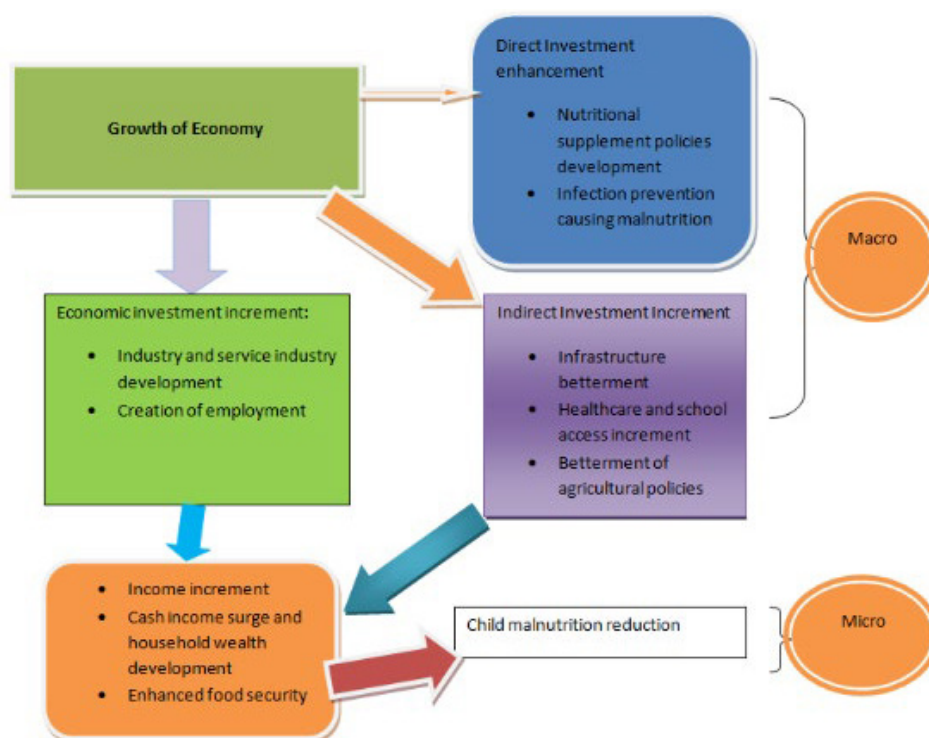


Figure 2: The Framework of Economic Growth and nutritional level of children.

Source: Self-developed

factors of children's malnutrition (O'Neill, 2024). Among these indicators, the most important and prevalent one is stunting which acts as the most prevalent factor of chronic malnutrition. Based on the educational qualifications of the parents, especially the mothers, the children are fed proper food items that contain important nutrients and various vitamins (Prasetyo et al., 2023).

The less the generation of waste, the higher the nutritional chances procured by the child. Children bearing lesser weight than those distinguished by the National Health Certification Authority have been considered as underweight children. The extreme forms of under nutrition are generated based on the tables and the survey-based results are created through the influence evaluation of the mothers upon the children. The most important factor regarding the health outcomes of children's nutrition-based indices is imposed in this study.

RESULTS

Table 1 of the study shows a summary of statistics variables which is mainly used for analyses the table mainly sheds light on the rise in the fraction of fathers and mothers with secondary and higher education over the period. The importance of inclusive growth strategies to ensure the gains from economic development reach all segments of the population, particularly the most vulnerable. The data

is collected from "National Health Profile 2022", "Country Office Annual Report 2023 by UNICEF" and "National Family Health Survey (NFHS - 5), 2019-21". Through analysing various malnutrition indicators-stunting, wasting, underweight, and their extreme forms. The study also highlights that economic resources alone are not sufficient to ensure good nutritional outcomes. The study explores how macroeconomic factors, household characteristics, and maternal education influence child nutrition outcomes. The result of the study is generally aligns with the expectation that economic growth helps in several dynamic.

Figure 3 presents underweight, wasting and stunting levels in India, from 2019 to 2023. The NDHS depict child malnutrition degree in India into different levels. Based on these 5 years' reports, an idea is generated to understand the suitable departments present within the Indian government that can provide demographic and health survey-related reports of children and adolescents. The Annual report of the Country Office of 2023 that is published by the UNICEF India branch is cultivated properly. However, the impact of economic growth on stunting, which reflects chronic malnutrition and long-term deprivation, is less clear. This highlights the importance of strategies for inclusive growth through ensuring the gains from economic development which also reaches every segment of the population, mainly the vulnerable population. The summary of Statistics is helping the study through analysing the different part of

Table 1: Summary of Statistics.

Variable	Survey year				
	2019	2020	2021	2022	2023
Mother's Characteristics					
Mother's age (%)					
15–19	5.2	5.0	4.8	4.5	4.3
20–24	18.4	18.7	18.9	19.1	19.3
25–29	30.1	30.4	30.6	30.9	31.2
30–34	22.7	22.9	23.1	23.4	23.6
35–39	15.3	15.1	14.9	14.7	14.5
40–44	6.1	6.0	5.8	5.6	5.4
45–49	2.2	2.0	1.9	1.8	1.7
Mother's education (%)					
No education	28.5	27.8	27	26.4	25.8
Primary	20.3	19.9	19.4	19	18.6
Secondary	38.6	39.2	39.9	40.5	41.1
Higher	12.6	13.1	13.7	14.1	14.5
Mother's occupation (%)					
Not working	70.2	69.8	69.4	69	68.6
Professional, technical	12.5	12.8	13.1	13.3	13.5
Sales services	5.0	5.2	5.4	5.6	5.8
Agriculture	8.3	8.1	7.9	7.7	7.5
Manual	4.0	4.1	4.2	4.4	4.6
Father's Characteristics					
Father's education (%)					
No education	15.8	15.4	15	14.7	14.3
Primary	25.2	24.8	24.5	24.1	23.7
Secondary	44.1	44.5	44.8	45.2	45.6
Higher	14.9	15.3	15.7	16	16.4
Father's occupation (%)					
Professional, technical	20.5	20.8	21.1	21.4	21.7
Sales services	8.2	8.4	8.6	8.8	9
Agriculture	40.3	39.8	39.2	38.7	38.2
Manual	31.0	31.0	31.1	31.1	31.1
Child Characteristics					
Sex of child (%)					
Male	51.5	51.4	51.3	51.2	51.1
Female	48.5	48.6	48.7	48.8	48.9
Current age of child (%)					
Less than 1 year	18.6	18.7	18.8	18.9	19
1 year	19.3	19.4	19.5	19.6	19.7
2 years	19.8	19.7	19.6	19.5	19.4
3 years	20	20.1	20.2	20.3	20.4
4 years	22.3	22.1	21.9	21.7	21.5
Household Characteristics					
Wealth index (%)					
Poorest	21.5	21.3	21.1	20.9	20.7
Poorer	20.4	20.2	20	19.8	19.6
Middle	19.7	19.6	19.5	19.4	19.3
Richer	19.2	19.4	19.6	19.8	20
Richest	19.2	19.5	19.8	20.1	20.4
Access to clean water? (%)					
No	4.2	4.1	4.0	3.9	3.8
Yes	95.8	95.9	96	96.1	96.2
Having a private toilet? (%)					
No	8.5	8.3	8.1	7.9	7.7
Yes	91.5	91.7	91.9	92.1	92.3

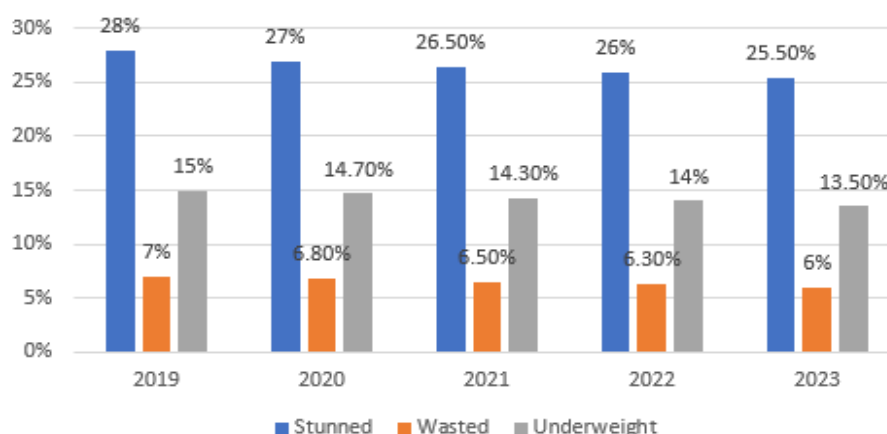


Figure 3: Under five year's malnourished children in India (2019-2023).

Source: National Family Health Survey, Govt of India

Table 2: Analyses of multiple logistics regression of economic growth and malnutrition.

Variable	Stunting	Underweight	Wasting	Extreme Stunting	Extreme Underweight	Extreme Wasting
Macroeconomic Variables						
Log GDP	0.665 (0.383–1.153)	0.644 (0.372–1.115)	0.538** (0.318–0.911)	0.501* (0.224–1.119)	0.484* (0.217–1.078)	0.661 (0.330–1.323)
Gini index	0.997 (0.987–1.007)	0.992 (0.980–1.005)	0.992 (0.968–1.016)	1.003 (0.993–1.013)	1.002 (0.979–1.026)	1.001 (0.970–1.034)
Mother's Characteristics						
Mother's age						
15–19 (Reference)	1.000	1.000	1.000	1.000	1.000	1.000
20–24	0.969(0.857-1.096)	0.881(0.609-1.275)	1.152(0.796-1.665)	1.080(0.938-1.243)	0.804(0.549-1.177)	0.811(0.485-1.356)
25–29	0.869*(0.753-1.004)	0.812(0.555-1.188)	1.239(0.882-1.740)	0.945(0.811-1.101)	0.803(0.552-1.168)	0.890(0.572-1.387)
30–34	0.844** (0.725-0.983)	0.835(0.569-1.226)	1.203(0.907-1.598)	0.938(0.801-1.099)	0.874(0.545-1.401)	0.835(0.554-1.259)
35–39	0.845*(0.701-1.018)	0.817(0.539-1.238)	1.053(0.794-1.395)	1.016(0.802-1.287)	0.753(0.467-1.214)	0.620** (0.417-0.922)
40–44	0.826(0.648-1.052)	0.848(0.519-1.385)	1.239(0.865-1.774)	0.914 -(0.705-1.184)	0.789(0.355-1.756)	0.833(0.483-1.436)
Mother's education						
No education (Reference)	1.000	1.000	1.000	1.000	1.000	1.000
Primary	1.007 (0.947–1.070)	1.075 (0.890–1.298)	0.893 (0.766–1.042)	0.993 (0.909–1.086)	0.946(0.651-1.376)	0.940(0.759–1.165)
Secondary	0.918* (0.839–1.004)	0.936 (0.796–1.100)	1.092 (0.892–1.338)	0.946 (0.839–1.066)	0.865* (0.747–1.000)	1.148 (0.863–1.528)
Higher	1.027 (0.856–1.233)	1.144 (0.827–1.582)	1.159 (0.847–1.588)	1.143 (0.932–1.402)	0.908 (0.492–1.674)	1.331 (0.867–2.042)
Mother's occupation						
Not working (Reference)	1.000	1.000	1.000	1.000	1.000	1.000
Professional, technical, clerical	0.997 (0.860–1.155)	0.941 (0.749–1.182)	0.874 (0.709–1.076)	1.009 (0.858–1.185)	0.941 (0.590–1.502)	0.919 (0.624–1.351)
Agriculture	1.274*** (1.117–1.452)	1.170 (0.949–1.443)	0.927 (0.728–1.180)	1.233* (0.998–1.523)	1.185 (0.839–1.674)	0.794 (0.533–1.185)
Manual	1.142 (0.878–1.485)	1.192 (0.676–2.103)	0.786 (0.484–1.277)	1.257 (0.891–1.773)	0.896 (0.450–1.782)	0.940 (0.419–2.107)
Mother is malnourished?						
No (Reference)	1.000	1.000	1.000	1.000	1.000	1.000

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Yes	1.099 (0.844–1.432)	1.305 (0.807–2.109)	1.240 (0.756–2.034)	1.073 (0.755–1.527)	1.313 (0.851–2.025)	1.224 (0.749–2.002)
Mother is currently pregnant?						
No (Reference)	1.000	1.000	1.000	1.000	1.000	1.000
Yes	1.025 (0.914–1.149)	1.215* (0.967–1.527)	1.089 (0.926–1.280)	1.056 (0.952–1.172)	1.208 (0.838–1.744)	1.144 (0.912–1.436)
Regular healthcare during pregnancy						
No (Reference)	1.000	1.000	1.000	1.000	1.000	1.000
Yes	0.964 (0.903–1.028)	0.913** (0.839–0.995)	0.970 (0.861–1.092)	0.943 (0.821–1.084)	0.912 (0.751–1.108)	0.868 (0.660–1.142)
Father's education level						
No education (Reference)	1.000	1.000	1.000	1.000	1.000	1.000
Primary	0.970 (0.892–1.055)	0.846** (0.720–0.995)	0.910 (0.756–1.095)	0.993 (0.909–1.086)	0.946 (0.651–1.376)	0.940 (0.759–1.165)
Secondary	0.909** (0.842–0.982)	0.851 (0.657–1.102)	0.937 (0.747–1.176)	0.946 (0.839–1.066)	0.865* (0.747–1.000)	1.148 (0.863–1.528)
Higher	0.829*** (0.744–0.924)	0.923 (0.675–1.263)	1.064 (0.848–1.336)	0.829*** (0.744–0.924)	0.923 (0.675–1.263)	1.064 (0.848–1.336)

economic growth and the dynamic of malnutrition of Indian. In India malnutrition become the common part and it also effecting very large portion of population badly.

In table 2 the logistic regression model shows an association of income per capita growth and the prevalence of underweight and wasting of children under five years old. For example, a 10% increase in per capita income is associated with a 5% reduction in the odds of a child being underweight. This suggests that economic growth has had a positive impact on reducing acute forms of malnutrition that are directly linked to immediate food security and access to healthcare. While the overall trend shows a decline in stunting rates with economic growth, the association is not always statistically significant, particularly when controlling for other factors such as household wealth, maternal education, and access to sanitation.

Children from wealthier households and those with more educated mothers are significantly less likely to be malnourished, regardless of the economic growth rate in their region. The Gini index, which measures income inequality within a region, shows a mixed impact on child malnutrition. In some cases, higher inequality is associated with worse nutritional outcomes, suggesting that the benefits of economic growth are not evenly distributed. This highlights the importance of inclusive growth strategies that ensure the gains from economic development reach all segments of the population, particularly the most vulnerable.

The key variable of interest, Log GDP, consistently shows a negative association with most malnutrition indicators, indicating that higher economic growth is generally associated with lower odds of malnutrition. Specifically, a statistically shows a negative relationship is observed of economic growth and the prevalence of underweight and wasting, with odds ratios of 0.538 and 0.454, respectively.

This suggests that a increase of 10% in GDP per capita could lead to a reduction in the odds of a child being underweight or wasted by about 5% to 6%. The Gini index, which measures income inequality, shows a mixed impact on malnutrition outcomes. For most indicators, the Gini index is not statistically significant, suggesting that income inequality may not have a direct or consistent impact on child malnutrition at the macroeconomic level.

However, the lack of significance does not rule out the possibility that inequality plays a role in specific contexts or regions, where the benefits of economic growth may not be evenly distributed. Maternal education and occupation are critical determinants of a nutritional status of child's s. Mothers with a high level of education tend to have children with lower odds of malnutrition across all indicators. For instance, the odds of stunting decrease significantly for children whose mothers have secondary or higher education. Overall, the results from Table 2 suggest that while economic growth is an essential factor in reducing child malnutrition, it is not a panacea. The effectiveness of economic growth in combating malnutrition depends on how its benefits are distributed and how it interacts with other determinants, such as maternal education, household wealth, and access to healthcare.

DISCUSSION

The study examines the relationship between child malnutrition and economic growth in India by accessing different data from different years. The finding focuses on analysing several indicators of malnutrition and emphasises the complexity of addressing malnutrition while highlighting the propanol and limitations of economic growth through tackling the persistence of public health issues. The results also corroborate the positive a negative association between GDP growth and waste and underweight prevalence among

the under-five children. According to the “National Family Health Survey conducted in 2019-21, approximately 36% of children under five years old in India were stunted, 19% were wasted, and 36% were underweight (dhsprogram.com., 2022)”. DBM requires a multi-sectoral approach which involves nutrition-sensitive and nutrition-specific interventions.

These findings align with the expectation that economic growth, by improving household incomes and access to resources, positively impacts children's nutritional status. Childhood malnutrition ultimately results towards substantial losses during adulthood and adolescence (Ghosh, 2020). The results imply that while economic growth can reduce malnutrition, the distribution of income gains is also crucial. If economic growth is not inclusive, its impact on malnutrition may be limited, particularly for the most vulnerable populations. This finding emphasises the importance of maternal education for improving health outcomes of a child. Educated mothers are more likely to adopt better health practices, ensure proper child feeding, and access healthcare services, which collectively contribute to better nutrition for their children.

The findings underscore the need for comprehensive policies that promote inclusive growth, improve the dynamic of maternal education, and enhance accessibility to healthcare and social protection measures to achieve significant and sustained reductions in child malnutrition in India. India continues to foster immunization, clean drinking water and access to safe sanitation, for under-five mortality reduction with an average annual rate of reduction of 4.6% (Unicef.org. 2023). This factor of malnutrition includes suboptimal infant feeding practices, inadequate child and maternal healthcare, long-standing poverty and poor sanitation for not resolving the economic environment. The mixed impact of economic growth of different malnutrition highlights the need of growth.

The Gini index shows a mixed impact on the malnutrition outcomes and also shows indicators which are associated with income inequality. Family planning services that help mother's space births can reduce the risk of malnutrition and also allow mothers to ensure adequate nutrition for the children. The family planning services that help mother's space births can reduce the risk of malnutrition by allowing mothers to recover and ensure adequate nutrition for each child. Malnutrition shows a person medical condition which is mainly caused by different unbalanced diet (Cbhidghs.mohfw.gov.in. 2022). The study mainly calls for an approach to addressing child malnutrition which helps to integrate economic growth while addressing soil policies under a broader determinant of health. These findings highlight the importance of targeted interventions during the critical early years of life, such as promoting exclusive breastfeeding, timely introduction of complementary foods, and ensuring adequate maternal nutrition during pregnancy.

CONCLUSION

The study highlights the significance of the limited role of economic growth that reduces India's child malnutrition. Economic development has contributed to declines in underweight and wasting, but its impact on stunting is a key indicator of chronic malnutrition. India continues to pursue the nature of economic development goals to adopt a multi-faceted approach which integrates economic growth with targeted public health interventions. Broader human development outcomes help to ensure all children have the opportunity to achieve their full potential. The study confirms the economic growth for reducing certain forms of malnutrition to access the resource directly for contribute towards the improved nutrition. Through adopting a strategy which integrates economic development with public health initiatives and policymakers for improving overall future generations' well-being in India. The study suggests that policies aimed at improving the working conditions and income stability of mothers in these sectors could help reduce child malnutrition.

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