

Child Malnutrition and Mortality in South Asia: A Comparative Analysis

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ABSTRACT

Malnutrition remains a notable health issue of considerable importance, especially in South Asia. The objective of this review is to highlight the extent of malnutrition prevalence and its trends in the South Asian region. Additionally, the review aims to propose potential strategies for preventing and managing this noteworthy public health issue. A thorough examination of the literature review was conducted, encompassing malnutrition and its influencing factors, health and economic repercussions, and practical preventive measures. The findings indicate that malnutrition is a significant public health issue with the potential to contribute substantially to the disease burden and mortality rates in South Asia. Compelling evidence underscores malnutrition as the primary cause of stunting, wasting, and child mortality conditions, with profound economic implications for vulnerable populations. Inadequate intake of micronutrients has been closely associated with reduced cognitive function and decreased productivity. The rising incidence of malnutrition in South Asia stems from a complex interplay of factors, including inadequate breastfeeding practices, insufficient food availability, micronutrient deficiencies, low household income, poor healthcare infrastructure, high medical expenses, illiteracy, unhygienic living conditions, inappropriate childcare practices, food insecurity, and the entrenched cycle of poverty but this can be overcome by learning from some countries such as Finland, Peru, and Brazil.

Keywords; Child Mortality, Malnutrition, Stunting, South Asia, Public Health Wasting,

1.INTRODUCTION

According to (WHO, 2022) Malnutrition refers to a broad spectrum of health problems caused by either insufficient, imbalanced, or excessive intake of energy and essential nutrients. This term encompasses three main categories as follows.

Undernutrition: which encompasses conditions like Wasting occurs when a person is too thin for their height, indicating recent weight loss or acute malnutrition.

Stunting: refers to a person being too short for their age, implying long-term malnutrition that has hindered their growth potential, and underweight indicates that a person weighs too little for their age, reflecting either wasting, stunting, or a combination of both.

Micronutrient malnutrition: which involves deficiencies in vital vitamins and minerals or excessive intake of micronutrients. Being overweight or obese significantly raises the likelihood of developing non-communicable diseases (NCDs) like heart disease, stroke, diabetes, and certain cancers. These NCDs are strongly associated with excessive weight and unhealthy eating patterns. As of 2021, roughly 2.3 billion adults worldwide suffer from various forms of malnutrition, equating to about 30% of the global population. Undoubtedly, it stands as one of the most significant global challenges confronting humanity (FEEDINDIA, 2022). According to progress reports from the United Nations, the world is grappling with approximately 150 million children experiencing stunted growth, along with 41 million children under the age of 5 who are dealing with obesity. Furthermore, one-third of the global population faces insufficient and irregular access to proper nourishment, while approximately one in ten individuals suffers from issues related to hunger (FEEDINDIA 2022). Children under the age of 5 in the Southern Asia subregion bear a significant burden of malnutrition. The rate of overweight is minimal at 2.5%, the lowest among Asian subregions with adequate data. However, the prevalence of stunting is notably higher at 30.7%, surpassing the global average of 22.0%. Additionally, the subregion exhibits a higher prevalence of wasting at 14.1%, exceeding the global average of 6.7% (Global Nutrition Report 2022). The Ministry of Health & Family Welfare conducts surveys to estimate the number of children under 5 years who are underweight, malnourished, or severely malnourished. The latest NFHS-5 survey, conducted between 2019 and 2021,

reveals positive changes in nutrition indicators for children under 5 years compared to the previous NFHS-4 data from 2015-2016. In particular, there has been a reduction in the prevalence of stunting from 38.4% to 35.5%, wasting has seen a decrease from 21.0% to 19.3%, and instances of underweight have declined from 35.8% to 32.1%. The under-five mortality rate, which measures the probability of a child dying before turning five, is calculated per 1,000 live births. Tragically, 5.0 million children under five passed away in 2021. Infectious diseases like pneumonia, diarrhoea, and malaria remain major causes of death in children under five, along with preterm birth and complications during childbirth. (UNICEF, 2023). The worldwide mortality rate for children below the age of five has experienced a substantial reduction of 59%, dropping from 93 deaths per 1,000 live births in 1990 to 38 in 2021. However, despite this significant improvement, the issue of enhancing child survival remains an urgent matter. In 2021, a staggering 13,800 under-five deaths were recorded each day, a distressingly high figure comprising mostly preventable child fatalities. (UNICEF, 2023).

In South Asia, the maternal mortality ratio has shown significant improvement, declining from 417 in 2000 to 138 in 2020. It's noteworthy that maternal mortality in South Asia is now below the global average. (WHO, 2023). The Sustainable Development Goal (SDG) target 3.1 aims to achieve a maternal mortality rate of fewer than 70 maternal deaths per 100,000 live births by the year 2030. (WHO, 2023). The aim of this study was to analyze child malnutrition and mortality in South Asia through a comparative approach. The paper was structured into five main sections. Initially, there was an introduction followed by a review of existing literature. The third section detailed the data and methodology utilized in the study. Subsequently, the results were presented and discussed in the fourth section. Finally, a conclusion and suggestion was drawn based on the findings presented earlier.

2. LITERATURE REVIEW

Child stunting reduces people's long-term vision of productivity and the country's economic growth (Sharma, N., Shastri, S., & Shastri, S. (2023)). Many underdeveloped societies in Africa and South Asia struggle with high rates of malnutrition, particularly in rural, tribal, and urban slum areas. Growing children are especially vulnerable to the harmful effects of malnutrition. (Srivastava et al., 2012). The increasing global population is projected to reach 9 billion individuals by 2050, posing a serious concern regarding the nutritional quality and safety of food in order to meet the needs of this growing number of people. (Buttriss and Riley, 2013). Childhood stunting hinders cognitive development, diminishes academic achievement, reduces earning potential, and elevates the likelihood of adult noncommunicable chronic illnesses (NCDs), collectively depleting human capital. (NITI Aayog, 2017; Leroy & Frongillo, 2019;). Maintaining a secure and adequate food supply for growing populations, particularly in resource-constrained economies, poses a significant challenge for the foreseeable future. These conditions may result in poor nutrition, which can weaken the immune system, hinder growth and cognitive development, and ultimately have a detrimental impact on overall health. In impoverished nations, child nutrition outcomes are particularly concerning. Poor dietary habits can have a detrimental impact on children's physical, cognitive, economic, and social development. (A. Purushottam et al., 2022).

In recent years, the area has faced a series of challenges, including climate-related disasters, economic upheavals, the impact of COVID-19, and conflicts, leading to a surge in food and fuel costs. These crises have created obstacles in crucial nutrition systems, affecting the accessibility of nourishing food and essential services for families. Approximately 64 million children in South Asia are experiencing severe food deprivation, lacking the essential food groups necessary for their early growth. (UNICEF report 2022). One-third of children in South Asia experience stunted wasting, a condition where children become dangerously underweight. Wasting in children results in developmental setbacks, weakened immune systems, and increased susceptibility to life-threatening diseases. Additionally, one in seven children in South Asia face growth-related wasting. Another manifestation of malnutrition involves deficiencies in crucial vitamins and minerals, contributing to conditions such as anemia and micronutrient deficiencies. The last type of malnutrition is obesity, which is connected to the amount and nutritional quality of the food children receive. Due to economic challenges, families have turned more frequently to affordable, pre-packaged, and heavily processed foods. Unfortunately, these food options lack the necessary nutrients for children and can contribute to obesity. Obesity rates have surged in South Asia, particularly among women and children. In the region, 4 million children under 5, 14 million adolescent girls, and 200 million young women are overweight. Additionally, one out of every two women in South Asia is anemia. This pattern is evident in the high number of infants in South Asia who commence their early days with precarious smallness, requiring additional care and facing an elevated risk of mortality. Approximately 25% of infants in South Asia are born with a weight below 2.5 kg. Optimal protection against diseases and the provision of essential nutrients for newborns can be achieved through early breastfeeding. However, only 40% of children born in South Asia are breastfed within the first hour of life, heightening their vulnerability to mortality within the initial four weeks. Consequently, addressing early childhood nutrition in South Asia necessitates crucial support for adolescent girls and women. (UNICEF report 2022). In India, the prevalence of stunting among children under the age of five decreased from 41.6% in 2012 to 31.7%. The overall incidence of wasting in 2022 stood at 18.7% in India, contributing to 49% of the

global burden for this malnutrition indicator. Over the course of a decade, the prevalence of obesity in India slightly rose from 2.2% in 2012 to 2.8% in 2022. (Joint Malnutrition Estimates (JME) released by UNICEF, WHO, and World Bank). Southern Asia faces a pressing issue of malnutrition among children under five. The prevalence of overweight in this subregion is relatively low at 2.5%, compared to other Asian subregions with sufficient data. However, the prevalence of stunting is alarmingly high at 30.7%, exceeding the global average of 22.0%. Moreover, the subregion's prevalence of wasting stands at 14.1%, also surpassing the global average of 6.7%. In addition to the malnutrition challenges among children, the adult population in the Southern Asia subregion faces its own nutritional burden. On average, 11.0% of adults (aged 18 and over) who are men live with diabetes, slightly higher than the rate of 10.1% for women. Moreover, 8.4% of women and 4.8% of men in the subregion live with obesity (Global Nutrition Report). Numerous studies have investigated various aspects, but there has been a notable gap in the examination of child malnutrition and mortality in South Asia in recent years.

3. DATA AND METHODOLOGY

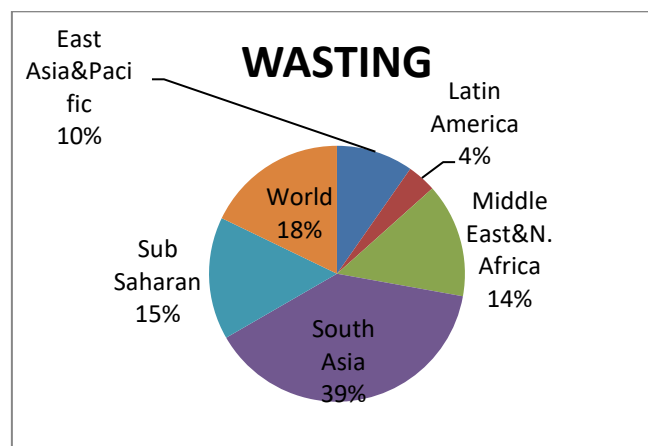
The study was based on secondary data collection from various public resources like UNICEF, WHO, GHI, etc. Table 1

Country	Stunted (%)	Wasting (%)	Infant mortality (%)	Underweight (%)	Overweight (%)
Afghanistan	38.1	5.1	43	19.1	4.1
Bangladesh	27.9	9.8	23	22.6	2.4
Bhutan	33.6	5.9	23	12.7	7.6
India	34.6	18.7	26	31.5	3.5
Maldives	14.2	9.1	5	14.8	4.9
Nepal	25	7.7	23	18.7	1.3
Pakistan	37.1	7.1	53	23.1	2.5
Sri Lanka	16.6	15.1	6	20.5	2

Source: - UNICEF 2022

Table 1 illustrates the extent of child malnutrition in South Asian nations, encompassing Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. The indicators considered are stunting, wasting, infant mortality, underweight, and overweight. Upon analyzing the data in descending order, Afghanistan has the highest rate at 38.1%, followed by Pakistan at 37.1%, India at 34.6%, Bhutan at 33.6%, Bangladesh at 27.9%, Nepal at 25%, Sri Lanka at 16.6%, and Maldives at 14.2%. Specifically examining wasting, India exhibits the highest rate at 18.7%, while Afghanistan has the lowest at 5.1%. For infant mortality, Pakistan records the maximum at 53, and Maldives reports the minimum. In terms of underweight children, India has the highest percentage at 31.5%, and Maldives has the lowest at 14.8%. Lastly, the determinants of child malnutrition indicate that Bhutan has the highest value, while Nepal has the lowest, standing at 1.3%.

Figure 1 Wasting Analysis of Global level



Source: - UNICEF 2022

Figure 1 illustrates a global analysis of wasting, indicating that in South Asia, the prevalence is 38 percent, significantly higher than the global average of 18 percent. In comparison, Sub-Saharan Africa stands at 15 percent. Furthermore, the levels of wasting in the Middle East and North Africa are 10 percent, while in East Asia and the Pacific, it is slightly higher at 14 percent.

Table 2 South Asian country underweight male and female

Asian Country	Underweight	
	Male %	Female %
Afghanistan	19.5	18.7
Bangladesh	22.4	22.9
Bhutan	13.3	12
India	32.3	30.6
Maldives	16.6	15.4
Nepal	14.2	20.9
Pakistan	24	22.1
Sri Lanka	20.6	20.4

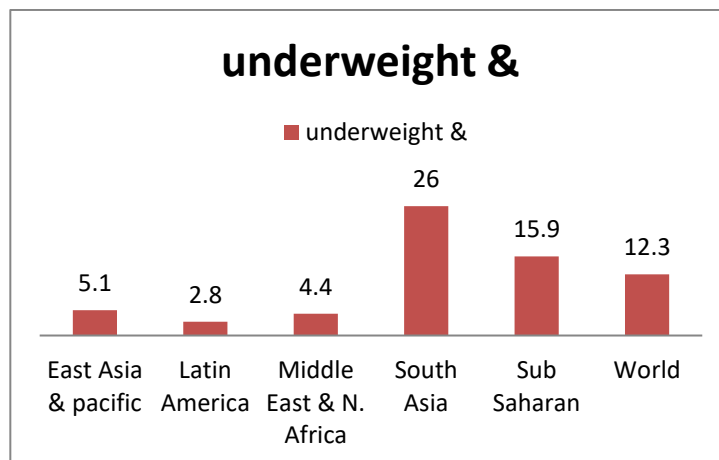
Source: - UNICEF 2022

The table above reveals notable trends in underweight percentages among males and females in Asian countries, specifically Afghanistan, Bangladesh, and Nepal. In Afghanistan, 19.5% of males and 18.7% of females are underweight. Likewise, Bangladesh exhibits a similar pattern, with 22.4% of males and 22.9% of females falling into the underweight category. Interestingly, in Bangladesh, the prevalence of underweight females surpasses that of males.

Nepal follows a comparable trend, with a higher percentage of underweight females compared to males. Despite these variations, a common observation emerges across all three nations: in the context of underweight populations, males consistently surpass females. This contradicts the prevailing global trend where, generally, females experience higher rates of underweight issues.

The disparities between male and female underweight ratios emphasize the need for targeted interventions in these countries. Understanding the factors contributing to the observed patterns, such as socio-economic conditions, cultural norms, and access to healthcare, is imperative for devising effective public health strategies. These insights can inform policymakers and aid in the development of gender-sensitive initiatives to address and mitigate the prevalence of underweight individuals, contributing to improved health outcomes in the region.

Table 3 Underweight in global level



Source: - UNICEF 2022

The bar chart above provides a global analysis of underweight populations, revealing South Asia as having the highest prevalence, while Latin America exhibits the lowest rates. This disparity can be attributed to several factors, primarily

the substantial population residing in South Asia coupled with a lower literacy rate. The multifaceted nature of this issue is further compounded by the region's high population density.

In South Asia, a myriad of factors contribute to the elevated prevalence of underweight individuals. Firstly, the sheer size of the population in the region places a significant burden on resources, impacting access to nutrition and healthcare. Additionally, the lower literacy rates in South Asia may hinder awareness and understanding of proper nutrition practices, exacerbating the prevalence of underweight individuals.

The interplay of socio-economic factors, cultural practices, and limited healthcare infrastructure also plays a pivotal role. The result is a complex web of challenges that collectively contribute to South Asia's maximum representation in global underweight statistics. Tackling malnutrition in Southern Asia necessitates a multifaceted approach that encompasses educational initiatives, strengthened healthcare systems, and tailored interventions to improve nutritional outcomes across the region.

Table 4 Trend of progress to reduce Stunting in (%)
From 2012 to 2022

Region	2012	2022
Africa	34.4	30
Asia	28.2	22.3
Caribbean	13	11.3
East Asia	7.7	4.9
Eastern Africa	38.6	30.6
Europe	5.1	4
Latin America & Caribbean	12.7	11.5
Middle Africa	37.9	37.4
South Asia	40.3	30.5
Southern Africa	23.4	22.8
World	26.3	22.3

Source: - FAO Food Security and Nutrition in The World 2023

Table 4 scrutinizes the analysis of trends in stunting reduction, attributing the significant decrease to major factors such as enhanced educational awareness and technological improvements. By examining the data for Africa, a notable shift is observed. In 2012, the stunting rate stood at 34.4%, while in 2022, it reduced to 30%. This reduction underscores the positive impact of advancements in education awareness and technology on nutritional outcomes.

The pattern observed in Africa appears to be reflective of a broader global trend, indicating that the improvement in stunting rates is not confined to a specific region but extends universally. The correlation between increased education awareness and technological advancements with reduced stunting is evident across various regions.

This positive change may be attributed to the dissemination of information regarding nutrition, healthcare, and child development, facilitated by advancements in education and technology. Improved access to healthcare services and nutritional knowledge could contribute to healthier child growth patterns.

Trend on Malnutrition among children under 5 years of age in South Asia

Figure 1 presents data on various child health and nutrition indicators for Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka across the years 2000, 2008, 2015, and 2023. The indicators include stunting, wasting, and child mortality, and the values are presented as percentages.

Figure, 2 AFGHANISTAN

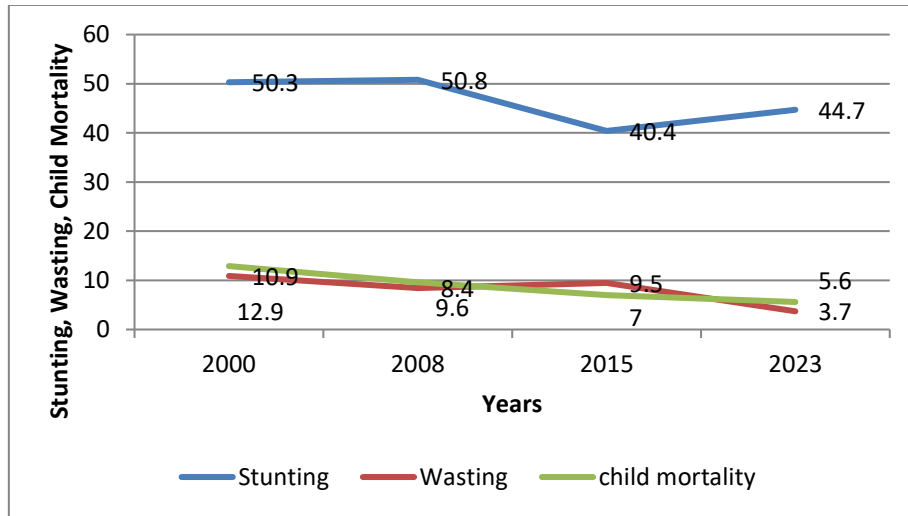
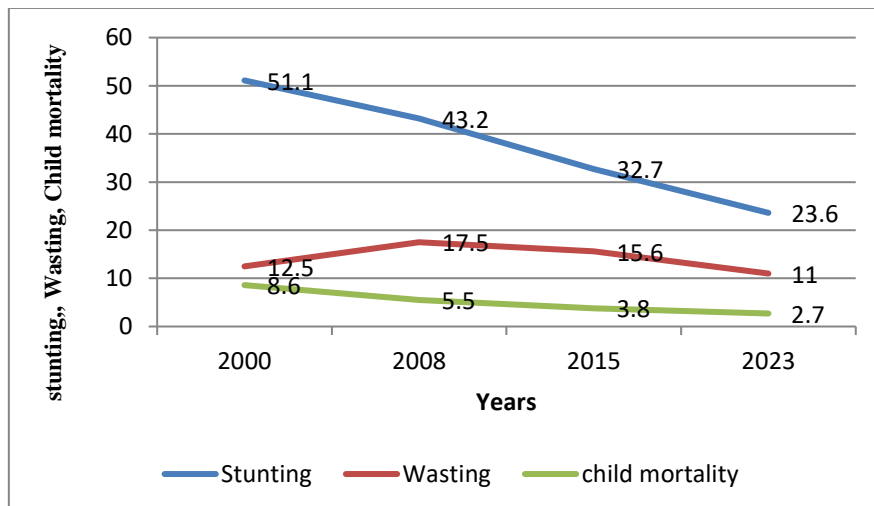


Figure 2, shown Stunting is a term used to describe a situation in which a child's height is considerably lower than the typical average for their age. In 2000, the stunting rate in Afghanistan was 50.3%, and it slightly increased to 50.8% in 2008. However, there was a significant decrease to 40.4% in 2015, followed by an increase to 44.7% in 2023. This indicates a mixed trend, with an overall improvement from 2000 to 2015, followed by a slight increase in stunting rates by 2023. However, Wasting is a condition where a child's weight is significantly below the average for their age. The wasting rate in Afghanistan was 10.9% in 2000, which decreased to 8.4% in 2008, increased to 9.5% in 2015, and significantly decreased to 3.7% in 2023. The sharp decline in wasting rates from 2015 to 2023 suggests substantial improvements in child nutrition during this period. Additionally, Child mortality refers to the death of children before the age of five. In 2000, the child mortality rate in Afghanistan was 12.9%, and it decreased to 9.6% in 2008, 7% in 2015, and further to 5.6% in 2023. The consistent decline in child mortality rates indicates positive developments in healthcare and child well-being over the year.

Figure, 3 BANGLADESH



Figure, 3 Bangladesh has made remarkable progress in improving child health and nutrition indicators from 2000 to 2023.

Stunting rates have shown a steady and significant decline, indicating improvements in children's overall growth and development.

Wasting rates, after an increase from 2000 to 2008, have been consistently decreasing, suggesting improved nutritional conditions for children.

Child mortality rates have seen a substantial and continuous decline, reflecting advancements in healthcare, sanitation, and overall child well-being.

Figure, 4 BHUTAN

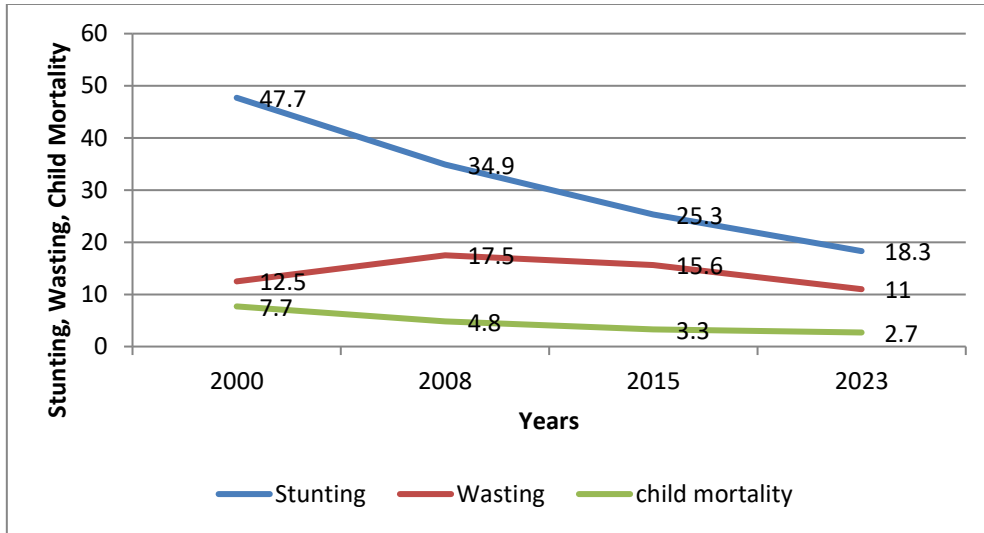


Figure 4, Bhutan has shown a consistent and significant improvement in reducing stunting rates from 47.7% in 2000 to 18.3% in 2023, indicating positive progress in addressing child nutrition and growth.

Wasting rates increased from 2000 to 2008 but have been consistently decreasing since then, reaching 11% in 2023. This suggests a successful effort to improve nutritional conditions for children.

Child mortality rates in Bhutan have seen a steady decline from 7.7% in 2000 to 2.7% in 2023, indicating improvements in healthcare and child well-being.

Figure, 5 INDIA

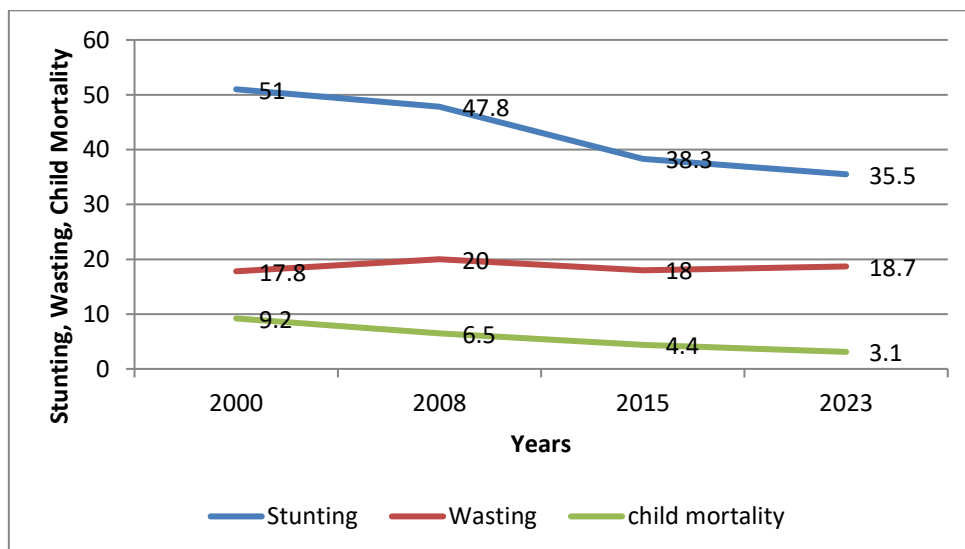
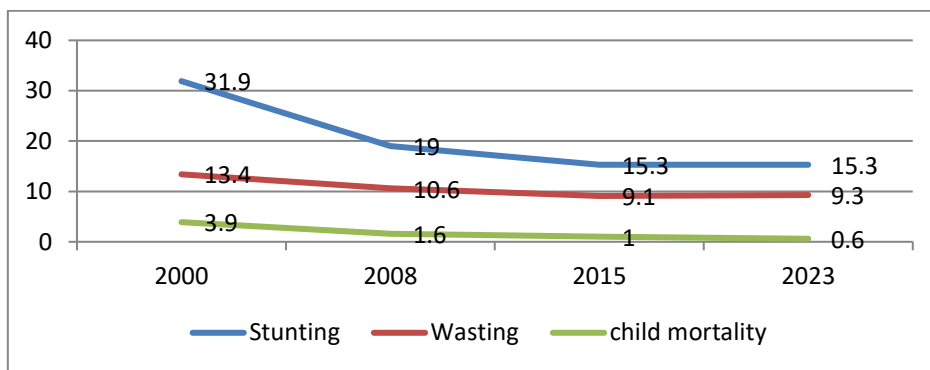


Figure 5, in 2000, the stunting rate in India was 51%, indicating that a significant portion of children had a height significantly below the expected average for their age. The stunting rate decreased to 47.8% in 2008, 38.3% in 2015, and further to 35.5% in 2023. The decreasing trend suggests an improvement in child nutrition and health over the years.

In 2000, the wasting rate in India was 17.8%, indicating that a considerable percentage of children had a weight significantly below the expected average for their age - The wasting rate increased to 20% in 2008, decreased to 18% in 2015, and then increased slightly to 18.7% in 2023. The fluctuations in wasting rates suggest some variability in nutritional status over the years.

The child mortality rate in India was 9.2%, indicating that 9.2% of children died before reaching the age of five. The child mortality rate decreased to 6.5% in 2008, 4.4% in 2015, and further to 3.1% in 2023. The declining trend in child mortality rates reflects improvements in healthcare, sanitation, and overall child well-being.

Figure, 6 MALDIVES



Figure, 6 revealed that the Maldives started with relatively lower stunting rates in 2000 (31.9%) and has shown a consistent decline to 15.3% in 2015 and maintaining the same rate in 2023.

Wasting rates have also shown a gradual decrease from 13.4% in 2000 to 9.3% in 2023, indicating improvements in child nutrition.

Maldives started with a low child mortality rate of 3.9% in 2000, and it has consistently decreased to 0.6% in 2023, suggesting high standards of healthcare and child well-being.

Table 7, NEPAL

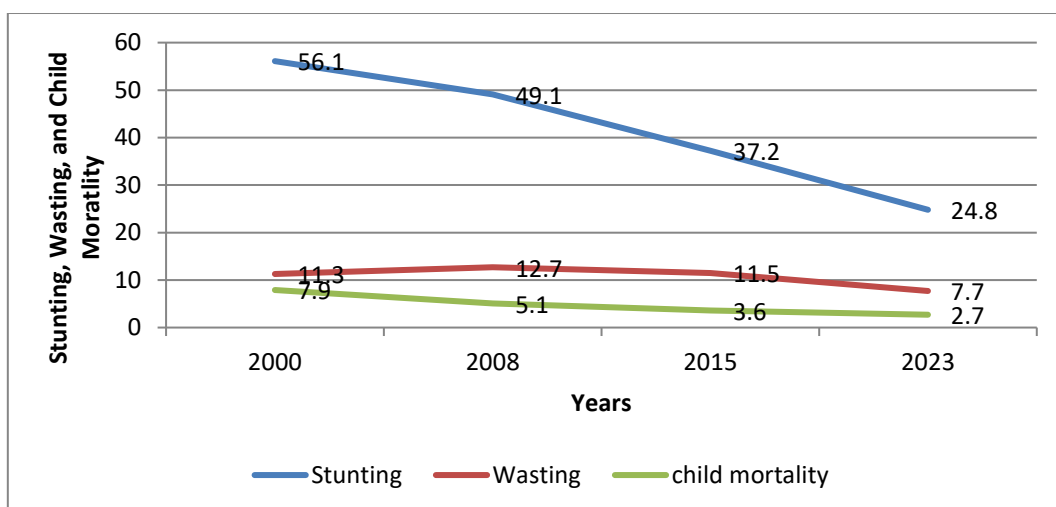


Figure 7, Nepal has made significant progress in reducing stunting rates from 56.1% in 2000 to 24.8% in 2023, indicating substantial improvements in child nutrition.

Wasting rates increased slightly from 2000 to 2008 but have been consistently decreasing since then, reaching 7.7% in 2023.

Nepal has seen a notable decline in child mortality rates from 7.9% in 2000 to 2.7% in 2023, reflecting improvements in healthcare and child well-being.

Figure, 8 PAKISTAN

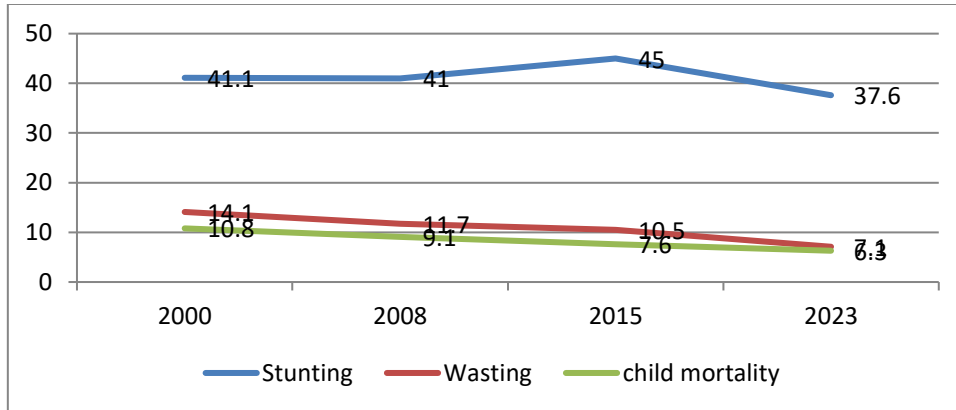


Figure 8, 2000, the stunting rate in Pakistan was 41.1%, and it decreased slightly to 41% in 2008. However, there was an increase to 45% in 2015 and a subsequent decrease to 37.6% in 2023. These numbers suggest some variability, with an overall improvement in recent years, similar to the trend observed in India.

The wasting rate in Pakistan was 14.1% in 2000, which decreased to 11.7% in 2008, 10.5% in 2015, and further to 7.1% in 2023. Unlike India, Pakistan has shown a consistent decline in wasting rates over the years, indicating improvements in child nutrition.

In 2000, the child mortality rate in Pakistan was 10.8%, and it decreased to 9.1% in 2008, 7.6% in 2015, and further to 6.3% in 2023. The decreasing trend in child mortality rates is consistent with the improvements observed in India.

Figure, 9 SRI LANKA

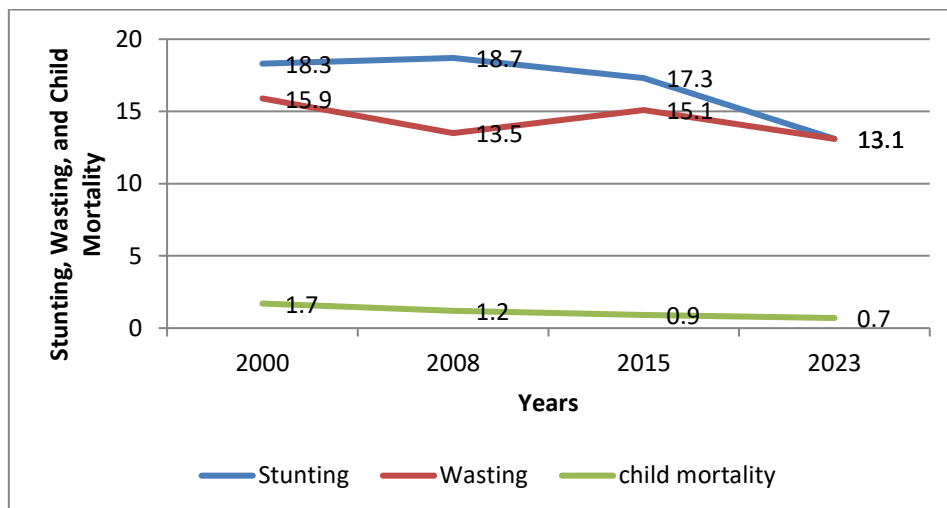


Figure 9 2000, the stunting rate in Sri Lanka was 18.3%, and it increased slightly to 18.7% in 2008. However, there was a decrease to 17.3% in 2015 and a subsequent decrease to 13.1% in 2023. These numbers suggest some variability, with an overall improvement in recent years.

The wasting rate in Sri Lanka was 15.9% in 2000, which decreased to 13.5% in 2008, but slightly increased to 15.5% in 2015, and further decreased to 13.1% in 2023.

In 2000, the child mortality rate in Sri Lanka was 1.7%, and it decreased to 1.2% in 2008, 0.9% in 2015, and further to 0.7% in 2023. The decreasing trend in child mortality rates is consistent with the improvements observed in India.

CONCLUSION AND FINDINGS

This study sheds light on the critical issue of child malnutrition and mortality in South Asian countries, including Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, and Pakistan. The research underscores the severe impact of stunting, wasting, and child mortality on both individual children and the nation as a whole.

The findings reveal that in the year 2000, Nepal, India, and Afghanistan experienced the highest rates of stunting, with Sri Lanka, Maldives, and Bhutan exhibiting the lowest. Similarly, wasting rates were notably high in India, Sri Lanka, and Maldives in 2000, but by 2023, Nepal had made significant progress in reducing wasting, achieving the lowest rate. Regarding child mortality, Afghanistan, India, and Nepal faced the highest rates in 2000, while Sri Lanka, Maldives, and Nepal demonstrated substantial improvements by 2023.

A positive trend emerges from the study, indicating that most countries have made strides in reducing stunting, wasting, and child mortality over the years. Notably, Sri Lanka and Maldives have consistently achieved lower rates, showcasing successful efforts in child health and nutrition. These two countries can serve as exemplary models for others to learn from.

The study proposes several recommendations based on its findings. Firstly, countries with successful outcomes, particularly Sri Lanka and Maldives, should engage in knowledge-sharing initiatives to facilitate the transfer of effective strategies and interventions. Tailored interventions addressing specific challenges, such as wasting in India and Sri Lanka, should be implemented to expedite progress. Strengthening healthcare systems is crucial for sustained progress in reducing child mortality rates across all countries. Cross-border collaboration and knowledge exchange among neighbouring countries can lead to shared solutions and more effective regional approaches. Continuous monitoring and evaluation mechanisms are essential to track progress, identify challenges, and adapt interventions accordingly. Finally, prioritizing nutritional education and awareness campaigns can empower communities and parents with the knowledge needed to ensure better child health.

Suggestions:

1. Knowledge Sharing: - Countries with successful outcomes, such as Sri Lanka and Maldives, should engage in knowledge-sharing initiatives to help others learn from their strategies and interventions.
2. Targeted Interventions: - Tailored interventions addressing specific challenges, such as wasting in India and Sri Lanka, should be implemented to accelerate progress.
3. Health System Strengthening: - Focus on strengthening healthcare systems to ensure sustained progress in reducing child mortality rates across all countries.
4. Cross-Border Collaboration: - Collaborative efforts and knowledge exchange between neighbouring countries can lead to shared solutions and more effective regional approaches.
5. Continuous Monitoring: - Implement continuous monitoring and evaluation mechanisms to track progress, identify challenges, and adapt interventions accordingly.
6. Nutritional Education: - Prioritize nutritional education and awareness campaigns to empower communities and parents with the knowledge to ensure better child health.

LIMITATION AND FURTHER STUDIES

Limitations: This study's scope is limited to South Asia, potentially overlooking regional nuances. Data constraints may impact the depth of analysis. Socio-cultural factors influencing child malnutrition require further exploration.

Further Studies: Future research should delve into specific country-level dynamics and employ a longitudinal approach. Exploring the impact of interventions and socio-economic policies on child malnutrition in South Asia warrants attention.

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