COST OF CHILDHOOD WASTING IN INDIA

Policy Brief

The Economic Loss and Societal Cost of Wasting

KEY FINDINGS

- **Loss in DALYs**: India lost an average of 60 million DALYs (Disability adjusted life years) during 2006-18 due to untreated childhood wasting. A major share (84%-96%) of loss was attributable to years of life lived with disability (YLD[i])[1]
- **Need to address severe wasting on priority:** Although only 28% of under-five wasting accounted for severe wasting (CNNS), severe wasting accounted for 46% of the under-five disability adjusted life years (DALY's) lost (during 2018). Thus, making it imperative to identify and more importantly, prevent severe wasting.
- **Losses in terms of per capita minimum wages per day:** The economic loss estimated in terms of per capita minimum wages per day ranged between 33 billion to 50 billion USD during 2006-18, with average annual losses of 40.4 billion USD i.e., an average loss of 2.4% of GDP[ii](2) secondary to untreated childhood wasting.
- **Losses in terms of per capita GDP:** Losses ranged between 58 billion to 116 billion USD between 2006-18 (average 83.4 billion USD per year); and 4.7% of GDP annually due to untreated childhood wasting.
- **Losses estimated in terms of notional loss at 1DALY=1000 USD**[iii]**:** Losses ranged between 51 billion and 72 billion USD (average 59.6 billion USD per year) and an average 3.7% of annual GDP due to untreated childhood wasting.
- **Societal costs estimated as a triple of the GDP** averaged at 250.3 billion USD (ranged between 174 billion and 348 billion USD) and an average of 14.2% of annual GDP due to untreated childhood wasting.
- The reduction in childhood wasting has been slow and if the trends of reduction till 2017 continue, India will have 10.4% excess prevalence of children with wasting, compared to revised WHO/UNICEF target of reducing wasting to 3% by 2030.

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[i] The disability-adjusted life year is a societal measure of the disease or disability burden in populations. The burden of living with a disease or disability is measured by the years lost due to disability (YLD) component, sometimes also known as years lost due to disease or years lived with disability/disease.

[ii] Gross Domestic Product, abbreviated as GDP, is the total value of goods and services produced in a country in a specific time period.

[iii] Applicability of 1 DALY=1000 USD is as per WHO standardization across the Globe as per Copenhagun Consensus 2008. Other calculations of economic loss (at per capita daily minimum wage and per capita GDP have also been provided for India specific context).

KEY ASKS

Children with wasting are at a higher risk of morbidity and mortality, and some eventually end up being stunted. The cost of untreated childhood wasting in India is very high; losses both economic and in terms of disability adjusted life years (DALYs). Thus, even if the mortality rates are lower among children with wasting in India, the issue requires urgent attention due to losses in terms DALYs and disabilities induced by wasting.

Community-based management of children with Severe Acute Malnutrition (SAM) supported with facility-based care for SAM children with medical complications has been proven to be cost effective. Therefore, a community-based program that includes essential health, nutritional and preventive/protective WASH interventions would enable early identification and management of severe wasting (SAM), preventing the development of further complications which would require to be addressed otherwise.

COALITION Food & Nutrition SECURITY

The Coalition for Food & Nutrition Security
New Delhi, 2020

INTRODUCTION

Every child has the right to survive, thrive, develop, and be protected. India, being a signatory to the Child Rights Convention and having prescribed the National Policy for Children, 2013 and National Plan of Action for Children, 2016, identifies survival, health and nutrition as undeniable rights of every child and key priority areas for the nation.

India has entrenched the right to food and nutrition in its constitution and has the largest public investment in food and nutrition security in comparison to any other country, through its public funded programs. Despite the huge investments in nutrition and significant economic growth over the past decades, India is at the epicenter of the global undernutrition crisis. SAM and under five prevalence of wasting (UNICEF, WHO and World Bank) being higher than most developing countries(3); host to four out of five such children, with 22 million wasted and over 8 million severely wasted children at any given time.

Wasting and severe wasting were at 21% and 7.5% in 2015-2016 (NFHS-4)(4) and 17.3% and 4.9% respectively in 2018 (CNNS)(5) in India. The recent NFHS-5 data recorded an increase in under five severely wasted children in 16 of the 22 states that were surveyed during the first phase(6). Newer evidence from a longitudinal study indicates that the actual wasting prevalence may be far higher than what is captured through the national cross-sectional surveys(7). Additionally, the assumption made in the study is that 10% of the stunting prevalence may be due to wasting. This may be a very conservative estimation and the burden may actually be much higher than estimated.

The mortality rate among children under five saw a steady decline from 269.8 per 1000 live births in 1953 to 34.3 in 2019(8) and life expectancy rates rose from 35.2 years in 1950 to 69.0 in 2018(9). The pace of reduction in prevalence of wasting among under-five has been slow and does not show a clear declining trend. Data from four national level nutritional surveys (NFHS-3, NFHS-4, RSOC, CNNS) (4, 5, 10) between 2006 and 2018, shows that the prevalence of wasting decreased from 19.8% (in 2006) to 17.3% (in 2018), and the prevalence of severe wasting reduced from 6.4% to 4.9% in the corresponding period. If the trend till 2017 continues, India would be faced with a 10.4% excess prevalence of children with wasting, against the revised WHO/UNICEF target under consideration for reducing wasting to 3% by 2030(11, 12). Also, with the expected increase in wasting as a repercussion to the COVID-19 crisis, it is not likely that India would be able to meet the 2030 targets.

Why should we invest in wasting?

The primary outcome of wasting is morbidity and mortality, and these have direct impacts creating health costs to individuals and community at large. Emerging evidences also show that repeated episodes of wasting at early age may also lead to stunting.

In India, almost 30% children below 6 months are wasted with a very high risk for relapses(4) and faltering into linear growth deficits. Again, children with linear growth deficits are at a higher risk of repeated relapse to wasting(13). Stunting or linear growth deficit has been proven to have detrimental effects on cognitive development; thereby affecting a child's learning ability, school performance eventually having adverse impact on adult life productivity.

The prevalence of wasting in India exceeds the emergency threshold of 15% or more prevalence that constitutes a "critical public health problem" as suggested by WHO deserving immediate attention(14) and NFHS-5 reiterates this trend in 17 of the 22 states surveyed in phase I.(6) Moreover, with the COVID-19 outbreak, childhood wasting is expected to rise significantly globally by at least 14.3%, with large proportions coming from South Asia(15).

The large-scale persistence of wasting in India is a threat to development as it impairs children's ability to withstand health shocks and contribute productively. During episodes of illness or food insecurity, they are at a far higher risk of death. Recent evidence from India shows that 19.5% deaths among children aged 0-59 months can be attributed to wasting (including severe wasting) while stunting accounted for only 4.4% of all deaths in this age group(11).

Wasting accounts for 19% of total DALYs in under-five children in India, as compared to 3.13% due to sub-optimal breastfeeding, 1.16% due to anemia, 5.93% due to Vitamin A deficiency and 0.39% due to zinc deficiency(11). The economic impacts of wasting thus extend beyond the individual and turn detrimental to the society and nation at large.

ESTIMATING COST OF WASTING IN INDIA

Much has been discussed internationally about the cost of undernutrition to human and financial capital of the country in terms of increased mortality, morbidity, and associated loss to productivity. Cost of wasting has been difficult to assess due to its transient nature where children usually recover or die. Secondly, the condition overlaps with other diseases and are therefore difficult to delineate.

A study on Cost of Childhood Wasting was commissioned by The Coalition for Food and Nutrition Security (CFNS) to estimate the losses incurred in India due to childhood wasting[iv], both in health and economic terms and to provide a picture of what the country stands to lose if wasting is not addressed. The National Technical Advisory Committee on Community-based Management of Acute Malnutrition at the CFNS conceptualized and anchored the study. CFNS has worked with leading nutritionists, public health professionals and consulted UNICEF, Children's Investment Fund Foundation (CIFF) and the Centre for Health Research and Development, Society for Applied Studies in designing the study process and methodology.

METHODOLOGY

This study quantified the potential indirect effect of untreated childhood wasting using the DALY lost analysis, DALY calculation and disability weights as specified in the Global Burden of Diseases 2013 document(16). The cost of childhood wasting was calculated taking into account the demographic and health parameters (2005-18). Economic loss was measured using year wise per capita daily minimum wage rate, year wise per capita GDP and notional value of DALY as 1 DALY=1000 USD. Additionally, it also included the burden and the economic impact of wasting induced stunting[v] to calculate the loss due to cognitive impairment and loss to adult life productivity.

KEY FINDINGS

I. Mortality due to untreated childhood wasting

Estimations on mortality indicate that 19.5% of all under- five deaths were attributable to wasting alone and 4.4% were attributable to wasting induced stunting(11), assuming 10% of the stunting prevalence was due to previous episodes of wasting(17). Though deaths reduced from 388,000 to 176,000 between 2006-18 owing to the overall decrease in under-five mortality and the reduced growth rate of child population, attribution of undernutrition associated mortality has remained unchanged over the given period.

[iv] Children whose Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are considered thin (wasted), or acutely undernourished.

[v] Wasting induced stunting - Stunting due to prior repeated episodes of wasting.

II. DALYs lost due to wasting

Given the estimated trends in the mortality due to wasting and wasting induced stunting in the study, the calculated total DALYs lost due to severe wasting in India reduced from 36 million (2006) to 23.7 million (2018). The total DALYs lost due to moderate wasting in India reduced from 30.4million (2006) to 24 million (2018). The total DALYs lost due to wasting induced stunting in India reduced from 5.7 million (2006) to 3.7 million (2018).

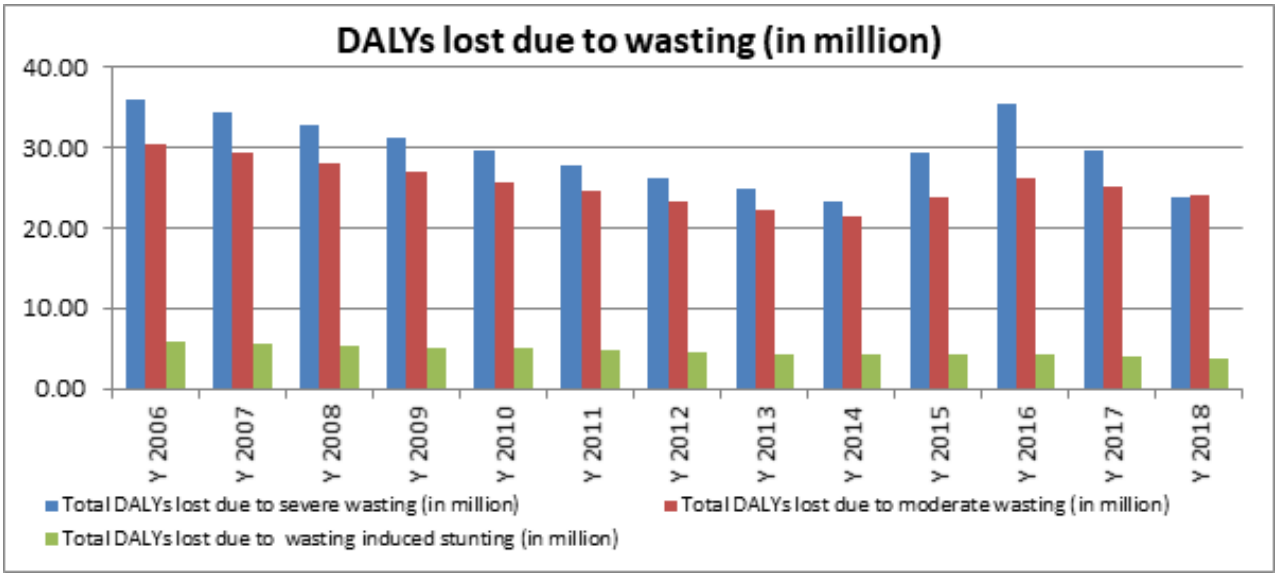

Figure 1: DALYs lost due to severe and moderate wasting and wasting induced stunting in India from 2006-18

The major share of DALYs lost was due to severe wasting as reflected in Figure 1. This indicates the delay in identification of children with wasting. Such children soon falter into severe wasting and develop complications making management critical and costlier as well increases chances for mortality. Therefore, regular screening of children for early identification and management of wasting is important.

Though the overall DALYs lost due to all causes of untreated childhood wasting reduced from 72 million (2006) to 51.3 million (2018), the average yearly DALYs lost in this period still stood high at 60 million. The observed reduction in DALY lost due to wasting may be attributed to the reduction in child population during the reference period 127 million (2006) to 116 million (2018), slight reduction in wasting prevalence and steady decline in overall under five deaths.

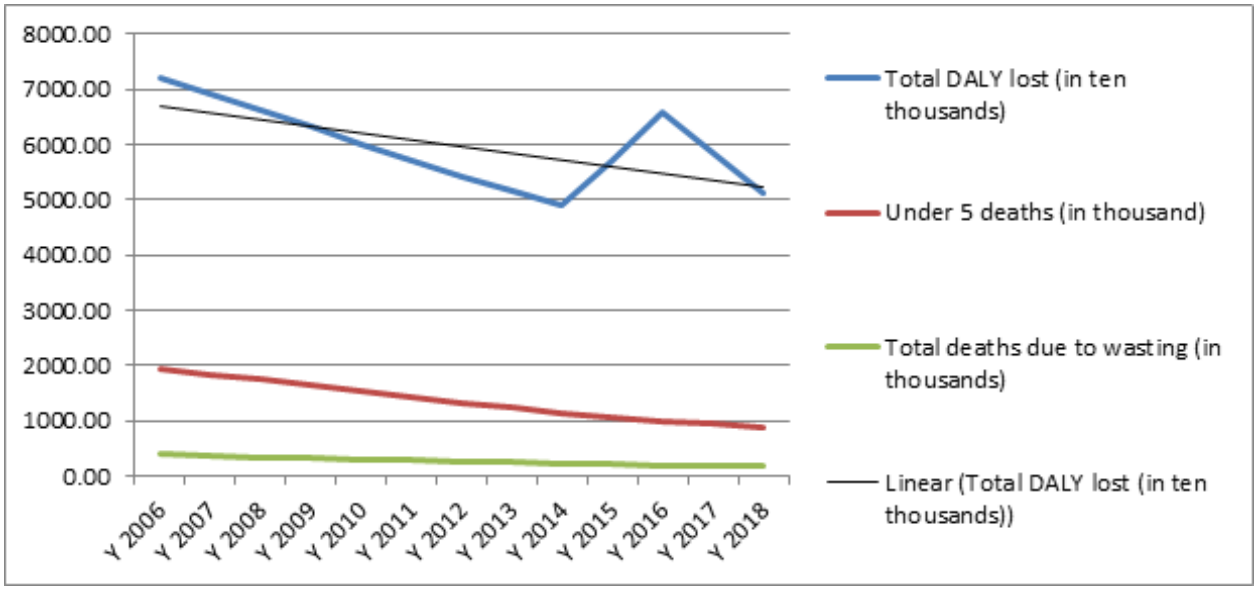

Figure 2: Trend of reduction in under-five mortality and mortality attributed to wasting and DALY loss in India.

III. Economic loss due to untreated childhood wasting

India lost between 58.1 billion USD (2006) and 116.1 billion USD (2017) in terms of per capita GDP, which was essentially 6.2% and 4.4% of the total annual GDP of the corresponding years. The average annual loss was 83.4 billion USD which is about 4.7% of annual GDP.

Economic loss as proportion of GDP, based on per capita minimum wage rate per day, was estimated to be 1.5% (2018) and losses estimated based on notional value of DALY was 1.9% (2018). The trend in GDP loss being between 3.8% of GDP (2014) and 6.2% of GDP (2006).

Overall economic losses as share of GDP for the respective years using all the four calculations has reduced over the period of time (Figure 3) due to reduction in under-five mortality and gradual increase in annual GDP of the country; nevertheless, the economic cost due to wasting remains very high for India.

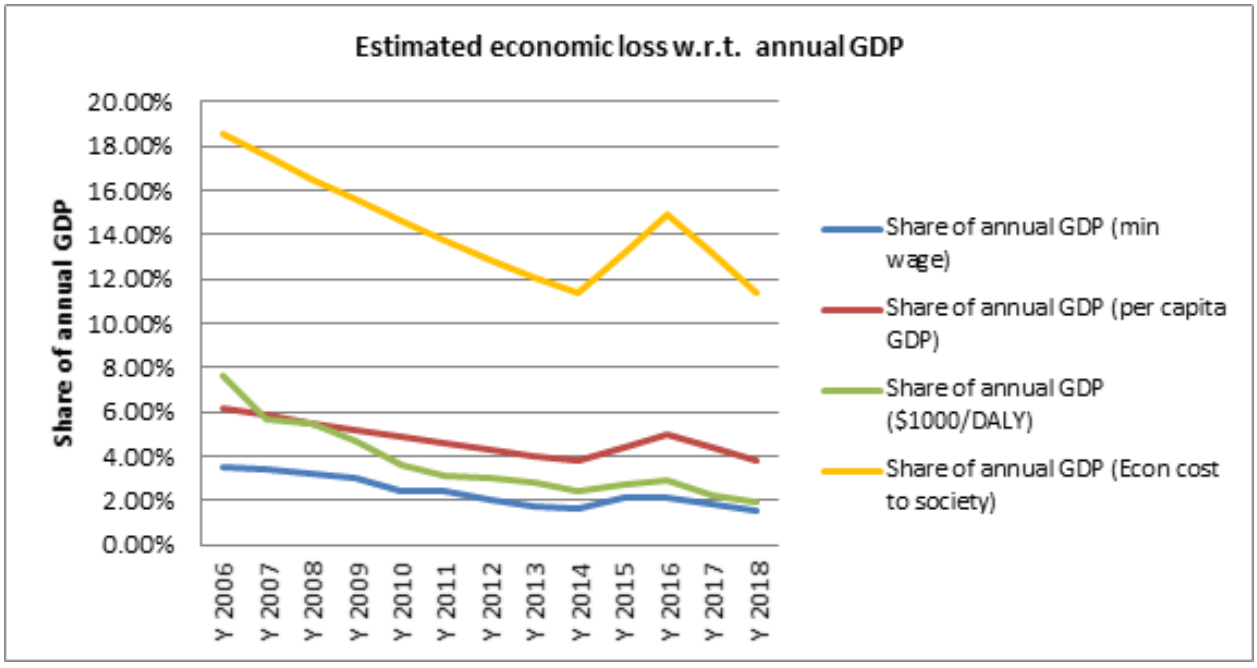

Figure 3: Trend of estimated economic loss w.r.t. annual GDP from 2006-18

IV. Societal cost of wasting

Besides the losses that a country incurs from untreated childhood wasting; losses in terms of mortality, economic losses due to ill health, loss of human resources and productivity etc. are the societal losses, which are manifold. Societal cost can be seen as a sum of loss incurred at individual level (mortality or disability adjusted life years) and losses incurred by the society at large due to lower cognitive abilities, compromised productivity, opportunity costs due to wasting and other intangible costs like loss of leisure, earning by mothers etc. To account for the societal economic losses, triple of per capita GDP was used for calculation[vi](18).

Cost to society ranged from 174.3 billion USD (2006) to 348.2 billion USD (2017), which was 18.6% and 13.1% of the annual GDP for the respective years. The average annual loss was 250.3 billion USD (14.2% of annual GDP).

NEED FOR RESETTING THE PRIORITIES

The rate of under- five wasting prevalence has not changed significantly in India between 2006 and 2018. Losses remained high in India; an average 60 million DALYs lost during the period as a result of the untreated childhood wasting and a majority of the losses incurred (84%-96%) can be attributed to years of life lived with disability/Years Lost due to Disability. This comprised of 84% of total DALYs among children with severe wasting, while for that of moderate wasting and children with wasting induced stunting the numbers were 88% and 96%. Although the mortality rate among children with wasting is in the run for a reduction, the issue would still require immediate attention to minimize losses incurred; DALYs lost from disabilities secondary to wasting. The proportion of loss to GDP due to untreated childhood wasting has declined over the years, mostly due to the steady decline in under- five mortality and the rise in GDP over time. Yet, even after accounting for the losses in GDP to the minimum of 1.5% in 2018 (calculated using year wise per capita daily minimum wage rate), it still represents a huge opportunity loss for the country, and underpins the importance of taking focused action for reducing childhood wasting in India.

Since childhood wasting comes with a huge societal and economic burden, and with the current rates of decline and the adverse post- COVID-19 effect, India is unlikely to meet the targets for bringing down under five wasting to 3% or less(11). All ultimately suggesting that more concerted efforts are required to address this issue.

[vi] Societal cost calculation as 3 times per capita GDP has been used in Indian context

RECOMMENDATIONS FOR ACTION

In addition to the existing public health and nutrition programs for essential nutritional interventions in India, added focus is required for addressing wasting.

1. *Integrated Management of Wasting: Wasting management can be accelerated through a combination of preventive, promotive and treatment approaches. Management of wasting in children below 6 months, early identification of wasting before it progresses in severity and associated medical complication and therapeutic care for SAM as per the 2013 WHO guidelines has to be the dictum. Community-based management of SAM (CSAM) is seen as one of the most cost-effective interventions to reduce the burden of malnutrition globally(19). WHO has laid down guidelines for community-based management of SAM children without medical complications that can improve access, treatment coverage as well as reduce the treatment costs.*

2. *Addressing underlying causes: Improving household food security in food insecure populations, ensuring access to diversified diet throughout the year, strengthening social safety net, universal health and family planning services and increasing threshold of WASH interventions are critical to prevent wasting. Strengthening of MNCH health facilities to be able to prevent infections through complete immunization, ensure better coverage of services and timely management of disease including diarrhea with ORS and zinc. A special attention to maternal and child nutrition care is required, these should focus on pre-natal nutrition, effective and exclusive breastfeeding in the first six months and appropriate complementary feeding in terms of quality, quantity and frequency from six months onwards.*

3. *Effective breastfeeding and Maternal, Infant and Young Child Feeding (MIYCF): An important strategy for reducing wasting is to reduce its incidence in the first six months of life itself. This requires massive promotion of techniques of effective breastfeeding and correct MIYCF practices. This is an investment which will give the society high returns particularly during scenarios like the current pandemic and its aftermath.*

4. *Equity-based programming: Besides emphasis on achieving gender equity, nutrition programs should also focus on children from poorer households and socially vulnerable communities (Scheduled castes, Scheduled tribes, migrants, and disaster hit families) that have higher proportions of childhood wasting. Programs must take into account this dimension with equity being a focal point.*

5. *Holistic management of undernutrition: One needs to be cognizant that multiple forms of undernutrition may coexist, and recent evidences have highlighted that wasting and stunting often coexist. Nutritional disparities and deficits vary between children, families, communities and in every likelihood the socio-economically vulnerable communities will have a greater disproportionate share of undernutrition. Therefore, improving coverage of the public health, nutritional services, social safety nets and improving outreach among vulnerable communities is imperative to reducing both wasting and stunting.*

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COALITION Food & Nutrition SECURITY

The Coalition for Food and Nutrition Security (CFNS)

B-40, NRPC COLONY, BLOCK- B
QUTAB INSTITUTIONAL AREA, NEW DELHI
PIN CODE- 110016
011-41058548
- http://www.nutritioncoalition.org.in/
- info@nutritioncoalition.org.in

- @cfnsnewdelhi
- @Cfns Delhi (The Coalition)
-@The Coalition for Food and Nutrition Security