STUNTING TOPIC OVERVIEW

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WHAT IS CHILDHOOD STUNTING?

DEFINING CHILDHOOD STUNTING

Childhood stunting is the failure of a child to reach her full growth potential as a result of long-term poor diet, health, and/or care, including emotional support. It is identified and measured based on a child’s height given her age. Stunting is so consequential because it is a marker of a child’s overall lack of health and well-being; it is associated with limits to a child’s physical and cognitive potential.

Stunting is caused by factors throughout childhood, but primarily during the “first 1,000 days”: the period just before conception (when the mother’s nutritional status is of paramount importance) to a child’s second birthday. Stunting itself largely cannot be treated, only prevented.

A child is considered stunted if her height-for-age Z-score, or “HAZ score,” is more than two standard deviations below the WHO Child Growth Standards median. Therefore, stunting is a statistical abstraction rather than a biological condition; children just above and below the cutoff may be categorized differently but face similar risks (see Figure 1).

As such, these growth standards are more useful as a measure of a population’s health and nutritional status than as a measure of an individual child.

FIGURE 1
HAZ scores: normal distribution

An estimated 22 percent of children under five (149 million children) were classified as stunted in 2018 (see Figure 2). About 91 percent of these stunted children are clustered in low- and lower middle-income countries. South Asia has the most stunted children in the world, with two out of five of all stunted children living in the region. While stunting prevalence has declined in every region since 2000, progress has been uneven, and the absolute burden has remained high (and has in fact even increased in Africa as a result of population growth).
STUNTING

Percentage of children under the age of 5 who are stunted, 2016*
*or most recent year where data was available after 2009

Source: World Development Indicators

AT THE INDIVIDUAL LEVEL, STUNTED GROWTH IS INDICATIVE OF A LOWER DEVELOPMENTAL CEILING. WHEN WIDESPREAD, IT HANDICAPS A COMMUNITY’S POTENTIAL.

IMPLICATIONS FOR INDIVIDUALS AND SOCIETIES
Stunted growth casts a shadow over a child’s future. Childhood stunting is strongly associated with lifelong reduced cognitive abilities and poor health. These physical and cognitive consequences are largely irreversible, despite parents’ best efforts later in the child’s life. Compared to a healthy child, a stunted child is more likely to have poorer educational outcomes, earn lower wages, and eventually have children who are themselves poorly nourished.

At the national level, stunting is associated with increased health costs, handicapped economic productivity, and reduced national growth. Recent studies have estimated that the health and child development challenges associated with stunting can cost countries between 4 and 11 percent of their gross domestic product (GDP) annually. Countries with high stunting prevalence, also burdened by less educated and healthy workforces, are inadequately equipped to compete in the knowledge economy (see Figure 3).
The history of “childhood stunting”

Height as an indicator of child well-being is a relatively new concept. Small babies and short children and adults were once seen as merely small or short. Their stature was widely understood to be the natural expression of cultural lineage or genetic inheritance. While this may be true in wealthy contexts, by the 1970s, researchers recognized that in low-resource settings, smaller children often faced a constellation of health and development challenges. They came to interpret short stature as “nutritional growth failure,” a critical indicator of a child’s physical and cognitive well-being. They dubbed this growth failure “childhood stunting.”

Once scientists recognized linear growth as a window into children’s health and a relatively accurate marker of inequalities in human development, they sought to quantify it. The World Health Organization (WHO) used a succession of child growth reference standards to help health care providers diagnose stunting. Among these were one set of standards based on a small group of primarily European-descended children in Boston and another based on bottle-fed babies in Ohio. These samples, biased by ethnicity, socioeconomic status, and geography, were widely recognized as inappropriate for global measurements, but there were questions about what to replace them with. Would each country need to develop its own growth chart? Would we need to develop sub-national growth charts for different ethnicities within a given country? These questions prompted the WHO to launch an international study to test the feasibility of a single international standard for physiological growth for all children from birth to five years old.

The WHO Multi-centre Growth Reference Study (MGRS), conducted from 1997 to 2003, did just that. It followed approximately 8,500 children from widely different settings in Brazil, Ghana, India, Norway, Oman, and the USA. Despite their geographic distribution, the children shared a few key characteristics: they were from relatively high-income families that had access to good nutrition and health care and followed best practices in health care, such as exclusive breastfeeding and avoidance of smoking.

The findings of the study were a revelation: all children, regardless of ethnicity or heritage, experience similar linear growth patterns through age five if their nutritional and health needs are met.

That all children have the same potential for growth was reinforced by a second study, done by the International Fetal and Newborn Growth Consortium for the 21st century (INTERGROWTH-21st). Using similar methods to the MGRS study, INTERGROWTH-21st measured fetal growth and newborn nutritional status. The study was a response to mounting evidence that growth during a child’s first 1,000 days (from pre-conception to the age of two) is especially important as a predictor of future life outcomes.
INTERGROWTH-21st confirmed the findings of the MGRS and confirmed that stunting starts in utero. It showed that fetal and newborn growth in length are similar across diverse geographic settings when mothers’ nutritional and health needs are met and environmental constraints on growth, such as a mother’s own history of poor nutrition or small size, are limited.12

Indeed, researchers have come to understand that differences in average height between nationalities and ethnic groups, at least in childhood, are primarily an expression of environmental constraints. Height varies far more within populations than between them.

The World Health Organization Child Growth Standards, released in 2006, are based on these two studies and the new universal expectations for child growth.

The WHO Child Growth Standards median applies in the same way across populations and ethnic groups worldwide.13 It is as applicable to children in geographies known for short stature as it is in geographies known for tall stature. It is as apt a measure of health and nutrition for a newborn as it is for a two-year-old.14

**FIGURE 4**

**WHO Child Growth Standards**

**WHAT ARE OUR GLOBAL GOALS?**

**CHILDHOOD STUNTING ON THE GLOBAL STAGE**

The first global commitment related to child malnutrition was the 1989 Convention on the Rights of the Child. Article 24 of this convention committed country governments to “combat disease and malnutrition” in children.

At the time, stunting was not explicitly mentioned in the global convention; instead, underweight (low weight-for-age) was the indicator of choice. It was, nonetheless, a watershed moment for efforts to eliminate stunting. As the closest proxy available for long-term malnutrition, stunting prevalence eventually became a key metric for measuring progress. Governments had previously been held accountable neither for tracking the numbers nor for reducing prevalence. The convention pushed governments to collect data on the number of children affected and report on their efforts to eliminate stunting.
2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.

These efforts gained greater urgency when the Millennium Development Goals (MDGs) included a commitment to reduce the percent of underweight children by 2015. The Sustainable Development Goals (SDGs) further elevated the issue by explicitly including a target on stunting. Sustainable Development Goal 2 committed countries to eliminate hunger. Target 2.2 specifically commits countries to “end all forms of malnutrition,” with childhood stunting as an explicit target.

The targets referenced in the SDGs refer to the WHO’s 2012 resolution to reduce the number of stunted children by 40 percent by 2025. Achieving this goal would bring the total number of stunted children down from 171 million in 2010 to 100 million in 2025.19

The SDGs also emphasize the importance of reducing inequalities, including inequalities in the stunting burden within countries. SDG 17.18 supports building capacity to collect “data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts” to track progress on outcomes for children of disadvantaged backgrounds.19

GLOBAL EFFORTS TO REDUCE STUNTING
Nutrition most recently rose to the top of the global health agenda in the late 2000s, with stunting at the forefront. Building on a solid foundation of scientific research, new nutrition initiatives pushed a globally cohesive approach to addressing stunting and other forms of malnutrition.17

The *Lancet* Nutrition series
In 2008, the *Lancet* published a landmark series of papers on Maternal and Child Undernutrition. The series made it clear that the first 1,000 days of life (from pregnancy through two years of age) are the most critical time to intervene; after this, damage caused by malnutrition is largely irreversible. It also drew attention to the scale of the problem: according to the series, over a third of child deaths and 11 percent of total disease burden worldwide is due to maternal and child undernutrition.

Despite this, nutrition, in the words of Richard Horton, editor in chief of the *Lancet*, was “a desperately neglected aspect of maternal, newborn, and child health.” While other maternal and child health interventions had received additional resources and attention in recent years, “somehow, nutrition [had] slipped through the gap.”18

The *Lancet* series brought nutrition into the global consciousness, advocated for an investment-oriented perspective on preventing maternal and child undernutrition, and provided a scientific foundation for intervention. In doing so, it spurred a host of global initiatives that followed shortly after its publication.

In 2013, the *Lancet* published an update to the series, this time re-evaluating issues around undernutrition while examining the growing problem of overnutrition. The research found that malnutrition was responsible for even more child deaths than previously noted – nearly half of all child mortality each year. This time, the series also modeled a series of 10 nutrition-specific interventions that could address up to 20 percent of stunting if coverage for all of them were to reach 90 percent (see Figure 5).19
Scaling Up Nutrition (SUN)

Inspired in part by the *Lancet* Nutrition series, the Scaling Up Nutrition (SUN) Movement was formed in 2010. Led by governments of participating countries, SUN unites civil society, the United Nations, donors, researchers, and the private sector in a cohesive effort to eliminate malnutrition. SUN aims to end malnutrition in all forms by 2030.

Each participating government nominates a SUN Government Focal Point. Globally, SUN convenes stakeholders, fosters commitments to behavior change, and mobilizes resources to scale up coverage of nutrition-specific and -sensitive interventions.

Today, the SUN Movement encompasses 61 countries and four Indian states. Its most recent Strategy and Roadmap, for 2016 through 2020, details four top priorities:

- Expanding and sustaining an enabling political environment
- Prioritizing and institutionalizing effective actions that contribute to good nutrition
- Implementing effective actions aligned with common results frameworks
- Effectively using and significantly increasing financial resources for nutrition

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**FIGURE 5**

**Interventions in undernutrition**

Together, these ten interventions could address up to 20 percent of stunting if coverage for all of them were to reach 90 percent.

- **Interventions modeled**
- **Other interventions reviewed**

**Positive outcomes**

- Decreased maternal and childhood morbidity and mortality → Improved cognition, growth, and neurodevelopmental outcomes → Increased work capacity and productivity → Economic development

*Women of reproductive age

Data source: The Lancet
**Nutrition for Growth (N4G)**

In 2013, 90 stakeholders representing governments, development partners, private sector actors, civil society groups, and scientists met at a summit in London to sign the Nutrition for Growth Compact. Nutrition for Growth generated a total of $4.15 billion pledged for nutrition-specific projects and $19 billion for nutrition-sensitive projects.21

Since then, Nutrition for Growth has continued to serve as a platform for governments, investors, and civil society to collaborate. An upcoming Nutrition for Growth summit in Tokyo, in 2020, promises to build on past successes.

**TRACKING OUR PROGRESS**

Tracking progress consistently is vital for evaluating the success or failure of global efforts to reduce child malnutrition and for holding stakeholders accountable. Over the years, various mechanisms have been developed to estimate the global burden of stunting and other forms of malnutrition.

**UNICEF State of the World’s Children**

The State of the World’s Children, first published in 1980, is UNICEF’s flagship annual publication. Its 1982–1983 edition ignited the child survival revolution.22 The 1998 edition focused on nutrition and examined three factors that affect children’s ability to develop fully: access to food, basic health services, and caring practices.23

Today, The State of the World’s Children provides an annual, country-by-country update of stunting, wasting, severe wasting, and overweight prevalence, using data from the Joint Malnutrition Estimates. It also includes coverage of interventions aimed at improving infant and young child feeding (IYCF) (early initiation of breastfeeding, exclusive breastfeeding, introduction to solid, semi-solid or soft foods at 6–8 months of age, minimal acceptable diet during 6–23 months of age), as well as micronutrient supplementation and fortification (vitamin A supplementation and consumption of salt with iodine).24

**Joint Malnutrition Estimates (JME)**

An inter-agency team made up of representatives from UNICEF, WHO, and the World Bank collates data on childhood stunting, overweight, wasting, and severe wasting prevalence and develops estimates of child malnutrition (global, regional, and by income group). The data are taken from Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), national nutrition surveys, and other surveys deemed nationally representative and of high quality.25

These data and estimates, collected and modeled annually, are considered the authoritative source for malnutrition epidemiology.

**Global Nutrition Report**

The Global Nutrition Report was created in the wake of the first Nutrition for Growth Summit in 2013. First published in 2014, it has since become the world’s authoritative report on the state of nutrition. The report typically covers the following areas:

- Global, regional, and country-level burden of various forms of malnutrition
- Trends, especially relevant to SDG targets
- Funding by governments and donors relative to commitments
- Highlighted areas of progress and remaining challenges
- Recommendations for the global community
The Global Nutrition Report is produced independently by (1) a Stakeholder Group, comprised of high-level representatives of governments, donors, civil society, multilaterals, and private sector entities, which guides the development of the report; (2) an Independent Expert Group, responsible for the quality of the report’s data, analysis, and conclusions; and (3) a Report Secretariat.  

PROGRESS AND PITFALLS TO DATE

The world has made significant progress on reducing stunting. Since 1990, when data was first collected consistently, the number of stunted children under age five has declined from over 250 million globally (40 percent prevalence) to 149 million (22 percent) in 2018.  

This is remarkable progress, but it is not enough to reach the WHO and SDG goal. Based on current trends, stunting is expected to affect 127 million children by 2025 – more than 25 percent higher than the WHO goal.  

Progress has also been uneven.

FIGURE 6

A global decline in prevalence of stunted growth

Large disparities in stunting reduction exist within regions/between sub-regions

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A global decline in prevalence of stunted growth


* Asia and Eastern Asia excluding Japan
** Oceania excluding Australia and New Zealand
*** Northern America sub-regional average based on United States data only. There is no estimate for More Developed Region of for sub-regions of Europe or Australia and New Zealand due to insufficient population coverage
† Represents regions/subregions where the change has been statistically significant
East Asia, Latin America, and the Middle East have achieved impressive gains: average stunting prevalence in those regions is now 15 percent or less.\textsuperscript{30} Meanwhile, the prevalence of stunting in sub-Saharan Africa has declined only slightly since 1990 and remains at close to 35 percent. While South Asia has seen more relative progress over time, its prevalence is still 35 percent. Overall, the burden of stunting continues to fall disproportionately on the poorest and least developed countries, with three quarters of the global burden located in sub-Saharan Africa and South Asia; 91 percent of global stunting is clustered in low- and lower middle-income countries (see Figures 6 and 7).\textsuperscript{31,32}

There are large disparities in stunting prevalence within regions, as well. For example, at 44 percent, Laos has one of the world’s highest childhood stunting rates. Its neighbor, Thailand, however, has a prevalence of just 11 percent.\textsuperscript{33} These disparities offer opportunities for policymakers to examine their neighbors’ progress when looking for appropriate models to adapt.

Finally, while childhood stunting prevalence has declined in most low- and middle-income countries, equity gaps have persisted within nations. Gaps between population subgroups, particularly between the richest and poorest wealth quintiles, have actually increased in many low-income countries over the past 20 years.\textsuperscript{34}

**WHAT’S NEXT?**

Meeting the WHO and SDG targets would cost approximately $8.50 per child per year (~$50 billion total between 2015 and 2025), according to projections by the World Bank, in partnership with the Gates Foundation and Children’s Investment Fund Foundation.\textsuperscript{35} Global spending currently totals less than half of this: about $3 per child per year.

Reducing childhood stunting is one of the best investments a country can make; however, just $2.9 billion per year – less than two thirds of the funding need – is currently being spent on stunting-specific interventions in high burden countries (see Figure 8).\textsuperscript{36}
The economic case for additional spending on evidence-based interventions proven to reduce stunting is strong. According to recent estimates, $1 invested in childhood stunting reduction generates at least $3 in economic returns (often much more) by also reducing child mortality and improving the quality of the workforce as children who reach their full growth potential enter adulthood.  

But money alone will not get us across the finish line. Top-performing countries have combined financing with political commitment. To help other countries replicate these successes, the World Bank has recently created the Human Capital Project (HCP), which:

- Created a Human Capital Index (HCI), of which stunting is a key component
- Improves outcomes measurement and scaling of M&E initiatives
- Provides direct technical assistance and strategic support to governments

Ultimately, achieving the WHO and SDG goal of a 40 percent reduction in stunting will require significant long-term investments, political commitment, improved understanding of the pathways leading to stunting reduction, and focus on population subgroups that are disproportionately affected.

Countries are making progress, both in identifying appropriate interventions and in implementing complex programs that require collaboration across government ministries, economic sectors, and civil society. Adapting these lessons globally will accelerate our progress in reducing in stunting worldwide.
WHAT CHALLENGES REMAIN?

GLOBALLY, CHILDHOOD STUNTING HAS SEEN STEADY AND SIGNIFICANT DECLINE over the past few decades, and there are a number of exemplars that prove rapid reduction is possible. Nevertheless, stunting prevalence remains high in many low- and lower-middle income countries.

The uneven progress to date in resource-limited settings reflects two key issues:

» **Gaps in understanding:** There are important things about stunting that we still do not fully understand. These gaps in our knowledge remain despite ongoing research on the subject.

» **Implementation challenges:** The multi-factorial nature of stunting that makes it a useful indicator for overall health and well-being also makes it challenging to address. Policymakers often struggle to identify which drivers of stunting played a key role in their geographic areas. Delivering the required multi-sectoral response to the children who need it most is both politically and practically challenging.

GAPS IN UNDERSTANDING

For an issue so critical to our future, there remains robust debate among experts on basic facts. Recent research, for instance, has challenged longstanding assumptions on the impact of improved water and sanitation on child growth. Outside the limited setting of a randomized controlled trial, there remains even more uncertainty as to what types of programs work at scale across diverse and geographically dispersed nations.

**Causes of linear growth retardation**

More than half a century after first identifying stunting as an indicator of long-standing malnutrition, we still have an incomplete understanding of the biological forces that retard linear growth. Indeed, the clean lines of the WHO Median Growth Curve chart mask a lack of certainty. Some linear growth retardation is clearly caused by inadequate caloric intake – similar to wasting (which is based on a child’s weight for her height). At the same time, a lack of important micronutrients can also contribute to stunted growth in children. And we do not fully understand the relationship between linear growth retardation (measured through stunting) and other forms of malnutrition (e.g., anemia, wasting, overweight).

**Implications for cognitive development**

One of the most significant implications of childhood stunting is its association with cognitive development. Stunted children often suffer from delayed mental development, which eventually leads to reduced cognitive abilities. While there is still more work needed to further understand the specific relationship between stunting and cognitive development, it is clear that an association between stunting and delayed or impeded cognitive development exists. Difficulty measuring cognitive development, particularly in low-resource settings, hinders further research. And tracking cognitive development at the same time points as accurate linear growth measurements is an even bigger hurdle to clear.
Effectiveness of interventions at scale
We know a lot about what works to address the factors that lead to stunting. In some countries, the 10 interventions identified by the 2013 Lancet Maternal and Child Nutrition Series have been implemented successfully, in concert with broad social programs, to decrease national stunting prevalence.

However, incomplete understanding of the biology behind linear growth retardation and a still-developing evidence base around both nutrition-specific and -sensitive interventions has left policymakers with uncertainty around some interventions with the potential to improve childhood growth.

Water, Sanitation and Hygiene (WASH)
The correlation between water, sanitation, and hygiene (WASH) and childhood stunting, though well documented in several large-scale studies, continues to puzzle researchers. While significant correlation has been identified between poor WASH and childhood stunting in analyses of cross-sectional and observational data, WASH intervention trials have not demonstrated a positive impact on linear growth.

Poor hygiene can serve as a pathway to stunting in a number of ways (see Figure 9). It increases the likelihood of infection, which demands a higher caloric intake to power an active immune system. Fecal-oral infection can cause diarrhea, which impedes the ability to fully digest food and extract vital nutrients. Finally, repeated diarrheal infection can inflame the small intestines, which chronically inhibits nutrient absorption. The condition, called environmental enteric dysfunction (EED) or environmental enteropathy (EE), is widespread among children and adults in low- and middle-income countries.39,40

However, while WASH conditions are regularly cited as strong independent risk factors for poor linear growth, they might also be confounded by other household indicators or elements of the study (e.g., contact frequency between promoters/participants and habit adoption). As a result, it is challenging to draw causal inferences around WASH effects on childhood stunting.

Recently, three randomized control trials (RCT’s) were conducted in Zimbabwe,41 Bangladesh,42 and Kenya43 to assess the impact of WASH interventions on linear growth. All three found no association between the two, stumping researchers.44 The rigorous trials tested large numbers of children in rural areas. The trials tested both nutrition interventions (supplementation, counseling on breastfeeding and complementary feeding) and WASH interventions (improved pit latrines, handwashing stations, and chlorine water treatment). Across all three trials, nutrition interventions were significantly associated with increased growth among children. WASH interventions, as implemented in these trials, were not.
While these trials failed to demonstrate causal links between select WASH interventions and HAZ, the debate persists given that several of the Exemplars examined demonstrate WASH remains important driver of stunting change – suggesting RCT’s may be a poor way to prove WASH contribution. One hypothesis is that since the trials only followed participants for 18 to 24 months after the interventions, they may have missed the impact of the interventions. Researchers have also posited that WASH interventions may require more widespread geographic implementation to take effect. Additionally, only a limited set of WASH interventions was tested; the study therefore did not evaluate the impact of different (possibly more effective) interventions (e.g., food hygiene interventions). Further research is required to make sense of these findings and consider implementing WASH interventions differently.

**Micronutrient supplementation**

As outlined in the *Lancet* nutrition series of 2013, micronutrient supplementation for women and children and/or fortification of food could be effective in reducing stunting. Included in the *Lancet*’s top ten nutrition-specific interventions are the following:

» Maternal balanced energy protein supplementation (for fetal development)
» Multiple micronutrient supplementation in pregnancy (for fetal development)
» Vitamin A administration
» Preventive zinc supplementation in children aged 6–59 months

However, the efficacy of these micronutrient interventions at scale has varied widely. While some interventions (e.g., vitamin A supplementation) have achieved high coverage and effectiveness, others have been observed as having mixed results (e.g., iron / folic acid, zinc), and still others have failed to scale effectively (e.g., calcium). Furthermore, assessment of impact at scale has proven difficult. Among other issues, measurement of program coverage and compliance has been inconsistent within and across countries.

**Maternal health and fertility**

It was not until the late 2000s that global evidence clarified the link between reduced fertility, increased birth spacing, prevention of adolescent births, and reduced intergenerational transfer of childhood stunting. As a result, fertility-related interventions remain underrepresented in nutrition policies today.

However, we now know that fully 20 to 30 percent of stunting occurs in utero. This intrauterine growth restriction accounts for the intergenerational aspect of stunting (and increases other health risks, including low birthweight). This intergenerational cycle starts in the mother’s childhood when she becomes stunted. As she grows into a teenager and then an adult, often still poorly nourished, she is more likely to give birth to babies that are small and poorly nourished. Years of slow and delayed growth follow. And the cycle of stunting begins once more (see Figure 10).

Pregnancy in adolescence exacerbates intrauterine growth restriction; teenage girls who become pregnant stop growing as nutrients get diverted to their fetuses. Therefore, reducing the number of adolescent pregnancies thus represents a significant opportunity for progress against stunting. Each year an estimated 10 million girls below the age of 18 are married. Adolescent pregnancies are also associated with health complications beyond stunting: a 50 percent increased risk of stillbirths and neonatal deaths and increased risk of low birthweight. Low birthweight is in turn associated with a greater risk of stunting.
Even in adulthood, decreased fertility and increased birth spacing can serve as levers to reduce stunting and interrupt the intergenerational cycle of stunting (although more evidence is needed). Both factors diminish the toll that pregnancy and childbirth take on women’s bodies. Women with fewer children more widely spaced in age have more energy and resources to devote to each child, both in the womb and after birth. Other interventions in maternal health – antenatal care and attendance at birth by skilled providers, for example – increase contact between women and health workers, thereby increasing the likelihood that they will learn and adopt best practices in caring for their own health and nutrition and that of their children.

Still, many governments and healthcare providers continue to underestimate the importance of family planning, maternal health, and maternal nutrition during and after pregnancy. Part of the challenge is that addressing these drivers—access to birth control, reducing child marriage, improving pregnant and lactating women’s access to good quality foods, and women’s access to prenatal care—often involves challenging deeply held customary beliefs that are difficult to change.

**IMPLEMENTATION CHALLENGES**

**Data collection and M&E**

Challenges in even identifying stunting exist in almost every geography. In low-resource settings, stunting is particularly hard to recognize. In such settings, newborns may not be measured or their birth date may not be documented, complicating later efforts to measure their growth. Children often do not visit health care providers regularly or see physicians and nurses who do not record height.

Even when a child is born in a health facility with a skilled health care provider, precisely measuring the length at birth of a newborn can be difficult. Weight tends to be a more important focus due to the importance of identifying low birthweight, which is also a risk factor for stunting.
Beyond difficulty measuring anthropometry of newborns and children, most governments also measure other key drivers of stunting inconsistently if at all. Important underlying factors, including maternal and household-level diet (both quality and quantity) and food security, household-level disposable income, women’s empowerment, and complementary feeding habits are poorly measured or not measured at all. Dietary intake and feeding frequency are especially challenging to measure in multipurpose surveys like the Demographic and Health Surveys (DHS), although some recent surveys have started to attempt this. Accurate, representative data on coverage and quality of nutrition-specific interventions, such as education about breastfeeding, complementary feeding, and micronutrient supplementation and fortification, is even more lacking.

The implications of inadequate data are significant for policy makers. Many governments do not know if their interventions are making an impact. Are they reaching those most in need? If yes, are the interventions working?

**Equity**

While childhood stunting prevalence has declined in most low- and middle-income countries, equity gaps have persisted within nations (see Figure 11).

Height continues to vary significantly among children based on level of maternal education, residence (urban or rural), ethnicity, and other sociodemographic factors. Some exemplar countries have started to resolve these inequalities through data-driven targeting of marginalized populations with specific interventions or by broadly attempting to raise the status of vulnerable groups. Doing so can be logistically and/or politically challenging, however.

**FIGURE 11**

Stunting prevalence by wealth quintile over time in Ethiopia

Countries can make progress on across the entire population in reducing stunting, but the progress in not always distributed equally.

In Ethiopia for example, significant progress was made even as disparities in stunting prevalence widened between least and most wealthy quintiles.

* Wealth gap calculated as the difference in stunting prevalence between the highest and lowest wealth quintiles.
Inadequate policies due to incomplete understanding

In many places, the WHO Child Growth Standards remain controversial. Some activists have argued against international growth standards entirely, citing the idea that some groups are genetically predisposed to be shorter than others. They maintain that holding all children to the same growth standards and therefore labelling children from certain groups “stunted” is inaccurate. In addition to being scientifically incorrect, this sentiment can easily become a justification for inaction.

Likewise, we have only recently appreciated the role of maternal health in contributing to poor child growth. The age of a mother, her height and body mass index (BMI), and the length of time between pregnancies each influence on her child’s height. Governments have been slow to act on these lessons and develop programs to educate women, increase access to family planning, and improve maternal care.

While global understanding of the drivers of long-standing child malnutrition has improved, we need not look far to see the effect that incomplete science has had on policy interventions. Until recently, donors seeking to improve childhood nutrition invested significant funding in feeding programs for school-age children. Though these school feeding programs had other benefits (e.g., keeping children in school), they tended to reach children too late in their lives to change their growth trajectories. Waiting until children were old enough to attend school to intervene meant missing the critical “first 1,000 days” from before conception to a child’s second birthday.

Governance, collaboration across sectors, and political commitment

The more we learn about the wide range of factors that contribute to childhood stunting, the clearer it becomes that solutions require strong governance, political commitment, and collaboration across sectors.

An effective government will typically excel at both developing evidence-based strategies (e.g., incorporating the latest scientific findings into policy; adapting global recommendations for local epidemiology, population dynamics, and cultural features) and executing them. Effective implementation requires the following, among others:

- Communication, continuity, and incentives across various levels of government and in far-flung geographies
- Prioritization and targeting of particularly vulnerable population subgroups and regions
- Regular and frequent monitoring and evaluation, as well as adaptation of tactics based on new information or changes on the ground
- Sustained and adequate funding

In practice, because most governments do not have ministries of nutrition, they must instead forge partnerships and structures for collaboration across multiple ministries (e.g., education, public works, agriculture, health, sanitation) to develop and implement effective responses to stunting. Collaboration of this sort, across ministries, has rarely been governments’ strong suit (with some exceptions like Peru).

Multi-sectoral programs also present financing challenges. Government funding is often earmarked by ministry rather than policy priority. Sharing and tracking funding across departments to address joint priorities comes with myriad management challenges.
While it is possible to overcome these challenges through operational excellence alone, high-level political commitment, ideally supported by a head of state, can galvanize a government and nation to achieve more in the fight against childhood stunting. In Peru, for instance, the President’s commitment to reducing stunting prevalence by nine percent within five years compelled ministries to work together and provincial and local governments to implement national-level policies. Similarly, Senegal’s Cellule de Lutte Contre la Malnutrition (Coordination Unit for the Fight Against Malnutrition; CLM), housed within the Prime Minister’s office, had the political backing to convene key stakeholders and generate support across sectors for a national-level nutrition strategy.
References


