



# **Nourishing Gender Equality:** **How Nutrition Interventions** **are an Underleveraged Tool** **in the Fight for Women's Rights**





1,000 Days is the leading non-profit advocacy organization working in the U.S. and around the world to improve nutrition, particularly during the 1,000-day window between a woman's pregnancy and her child's 2nd birthday. We work to promote action and investment in nutrition in order to build a strong foundation for children, their families, and their nations to thrive.

## **Contents**

### **Introduction**

Page 5

#### **What is malnutrition?**

Page 6

#### **What works to boost nutrition?**

Page 6

#### **Women and girls face bigger nutritional challenges than men and boys**

Page 7

#### **How better nutrition can be a tool for women and girls to claim their rights**

Page 9

### **Health and Survival**

Page 11

### **Economic Participation and Opportunity**

Page 15

### **Educational Attainment**

Page 19

### **Conclusion**

Page 23





“

**Investment in nutrition is crucial to future efforts to improve the health of women...; the potential human, societal, and economic gains from such investment are substantial.**

**Dr Francesco Branca,**  
World Health Organization (WHO) and colleagues

# Introduction: Making the connection between nutrition and women's empowerment

Today, more than one billion women and girls around the world do not have access to the healthy diets they need to survive and thrive (FAO et. al., 2019), and two-thirds of countries report higher rates of food insecurity for women than men (WFP, 2019). A variety of cultural, economic, biological, and structural barriers impede women and girls from accessing healthy, nutritious food:

- Women and girls need a wider range of nutrients than men, especially during adolescence, pregnancy, and lactation.
- Despite this, women and girls frequently lack control over household spending decisions and eat last and least in their families, especially in food-insecure households.
- On average, women work longer, earn less than men, and face additional obligations for unpaid care and domestic work, limiting the resources they have available to spend on adequate nutritious food.

## These factors contribute to women and girls being 50% more likely to be undernourished than men and boys.<sup>1</sup>

Ending discrimination against women and girls requires dismantling power structures that deny them their voice, power, and rights, including the right to adequate nutritious food. A growing body of evidence shows introducing women's empowerment components to nutrition programming can improve the impact of standard nutrition interventions (ADB, 2013; Tayal, 2019). This evidence is leading nutrition advocates to think and act more deliberately about how gender rights-based approaches can strengthen nutrition programming and improve nutrition outcomes.

Likewise, advocates for ending gender injustice can find opportunities to strengthen their programming by adding nutrition components. Malnutrition increases the other barriers women and girls face. **Well-nourished women and girls are healthier, more productive, and more likely to finish school, be economically independent, and have healthy babies.** Most important, they possess the increased human potential to exercise their agency and claim their fundamental rights. By leveraging targeted nutrition interventions as a key part of gender equality programming, women's empowerment actors can realistically and cost-effectively boost their investments and move the world back on track to reaching SDG 5.<sup>2</sup>

This framing document seeks to look at **three specific areas** where a more intentional focus on nutrition offers advantages for women and girls in their fight for gender equality:

- From even before a girl is born, good nutrition is a crucial component in supporting her lifelong right to **Health and Survival**, allowing women to live longer, better lives.
- By boosting individual workforce participation and earning potential, good nutrition has a proven positive impact on women's full and equal **Economic Participation and Opportunity**.
- Access to good nutrition allows girls' brains to develop fully and impacts how well women and girls can perform in school. It also secures their right to equal **Educational Attainment** with men and boys.

The nutrition and women's empowerment sectors are mutually reinforcing, and it is time to link them more intentionally. **Nutrition interventions are critical to making concrete, cost-effective, and long-lasting improvements to the status of women and girls around the world.**

---

<sup>1</sup> Estimates show that 60% of the world's chronically hungry people are women (UNSG 2011), meaning that women are 50% more likely to be undernourished than their male counterparts who make up only 40% of the world's chronically hungry.

---

<sup>2</sup> SDG5 refers to the fifth Sustainable Development Goal: Achieve gender equality and empower all women and girls by 2030.

## What is malnutrition?

Malnutrition occurs when someone consumes too few or too many nutrients to meet their body's needs. Malnutrition occurs in three forms:

- **Undernutrition** occurs when people are unable to consume enough healthy food.
  - *Chronic undernutrition* is when someone is deprived of adequate nutrition over a long period of time. It often results in stunting (being too short for one's age) and is associated with poor health, lower cognitive capacity, and increased susceptibility to non-communicable diseases later in life.
  - *Acute undernutrition* is caused by a decrease in food consumption and/or illness. It often results in wasting (being too thin for one's height) and is associated with poor health, death, and increased susceptibility to stunting.
- **Overnutrition** occurs when people consume too much food. Overnutrition often results in overweight or obesity and is linked with life-threatening non-communicable diseases such as diabetes, hypertension, and cardiovascular disease.

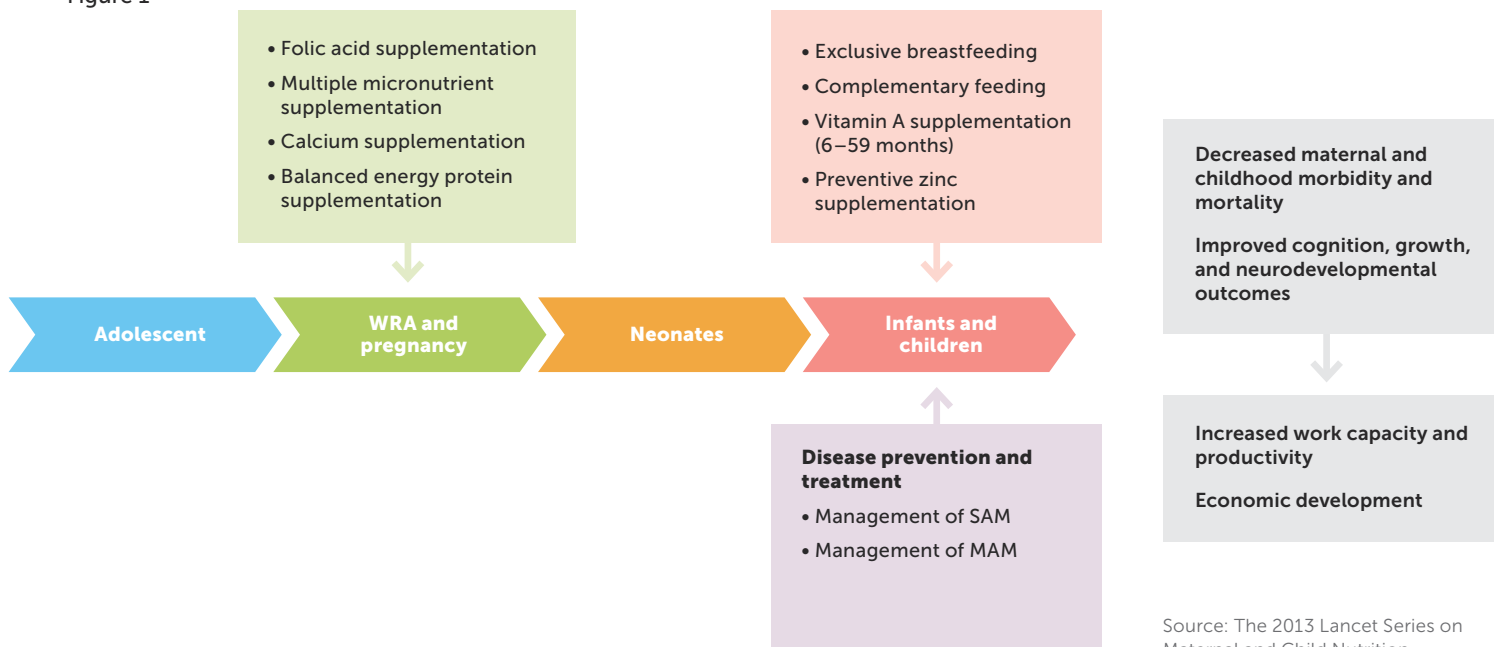
- **Micronutrient Deficiency** occurs when people do not absorb enough micronutrients (vitamins and minerals) such as iron, protein, or Vitamin A. This "hidden hunger" results in a host of health and cognitive challenges such as reduced productivity, increased susceptibility to and severity of disease, and maternal mortality.

## What works to boost nutrition?

Fortunately, there are actions we can take today to drastically reduce the global burden of malnutrition. In September 2019, the World Health Organization (WHO) released an updated, comprehensive suite of evidence-based, key nutrition interventions to guide member states and other actors to intensify their efforts to reduce malnutrition. These "[Essential Nutrition Actions](#) (2019)," along with a [suite of recommendations from the Lancet medical journal](#), serve as a blueprint for best-practice nutrition programming and a clear guide for other sectors to engage more directly in nutrition interventions.

Many of these interventions specifically target women and their children, allowing them to undergo healthier, happier pregnancies and grow into strong, productive adults. This includes activities such as breastfeeding support, providing micronutrient supplementation, behavior change communication, food fortification, and providing ready-to-use therapeutic foods to treat acutely malnourished children. While interventions across many sectors (agriculture, education, WASH, etc.) impact and improve nutritional status indirectly, the most established evidence is around the series of specific, health-related interventions illustrated in figure 1.

Figure 1



Source: The 2013 Lancet Series on Maternal and Child Nutrition



## ► The First 1,000 Days: The crucial window to secure lifetime health and success

While good nutrition is important for everyone, it is especially important during the 1,000 days between a woman's pregnancy and her child's 2nd birthday. During the first 1,000 days, there is a brief window of opportunity to drastically improve a child's development and long-term health. In this period, a child's brain begins to grow and develop and their bodies set foundations for health throughout their lives. Malnutrition in this period is especially dangerous, resulting in irreversible setbacks including stunted growth, reduced cognitive development, and a predisposition for obesity and non-communicable diseases (NCDs) later in life. Investing in proven, cost-effective nutrition interventions in the first 1,000 days provides the foundation for children to develop to their full potential.



### Women and girls face bigger nutritional challenges than men and boys

Malnutrition affects more than 1 billion women in every country around the world. That number is rising. Every year, malnutrition kills more women than any other risk factor including tobacco, alcohol, and air pollution (GBD, 2019). Globally, it is the single largest driver of mortality and morbidity, causing 45% of child deaths, 20% of maternal deaths (USAID, 2019), and 22% of premature adult deaths (GBD, 2017). Around the world today, more than 1 billion women experience at least one form of malnutrition (FAO, 2019), costing the global economy an estimated \$3.5 trillion (FAO, 2013) every year in health expenditures and lost productivity.

A variety of cultural, economic, biological, and structural factors make women and girls more susceptible to malnutrition than their male counterparts. Globally, women and girls represent 60% of all food-insecure people, and two thirds of countries report higher rates of food insecurity for women than men (WFP, 2019). Women also face higher rates of overweight and obesity than men, especially women with low socioeconomic status (Vizcarra et al. 2019). Today,

more than one billion women and girls around the world do not have access to adequate nutrition and the healthy diets they need to survive and thrive (FAO et. al., 2019). As climate change continues to jeopardize crop yields, migration rates continue to grow, and processed foods continue to replace traditional staples in communities around the world, the number of both under- and over-nourished women is likely to rise in coming years.

**Women are doubly vulnerable to undernutrition [and] micronutrient deficiencies, owing to their high nutritional requirements for pregnancy and lactation, and also because of gender inequalities in poverty.**

Helene F Delisle,  
University of Montreal

## ► The Gender Gap in Exclusive Breastfeeding in India: A Case Study on the Women's Empowerment-Nutrition Nexus

Around the world, many countries are developing increasingly skewed sex ratios as a result of gender discrimination and a strong preference for male children. Experts estimate that these skewed ratios represent at least 130 million women who are 'missing' from the world today (Ritchie and Roser, 2019). Though this phenomenon has often been attributed to widespread sex-selective abortion and infanticide at birth, neglect of infant girls is equally insidious and pervasive.

One of the biggest underlying causes of this excess mortality among girls in India, where there is a strong son preference and a highly skewed gender ratio, is gender-differentiated rates and lengths of exclusive breastfeeding. Indian mothers breastfeed their sons exclusively for up to 24% longer than their daughters (Barcellos et. al. 2014). Differential breastfeeding is especially prevalent in families that don't yet have a son. Breastfeeding acts as a natural birth control, delaying the likelihood of another pregnancy. Women who do not yet have a son often stop breastfeeding early because of pressure to 'try again' for a boy as soon as possible. Some estimates suggest that in India roughly 9% of the gender gap in child mortality, or 8,000 to 21,000 missing girls annually, can be attributed

to differences in breastfeeding (Jayachandran and Kuziemko 2011).

This difference in exclusive breastfeeding rates is not only responsible for girls' mortality. Without the critical nutrition in breastmilk, baby girls often suffer from measurable developmental impairments (Barcellos et. al. 2014) that put them at a huge disadvantage compared to boys who have been breastfed for longer. The girls who survive to adulthood will obtain less education and earn lower incomes.

As strict policies lead to decreasing rates of sex-selective abortion, more girls will be born. But many of them, especially those without older brothers, will be set on a path of growth faltering, delayed cognitive development, and increased susceptibility to illness. Women's empowerment and nutrition actors will have to work hand-in-hand to address this problem. Without a greater emphasis on gender equality, preference for male children is likely to continue. But changes in cultural attitudes happen slowly. In the meantime, targeted breastfeeding promotion and protection, especially for women who are pregnant with their next child, will help ensure generations of girls have a more equal start in life.





### Compared to men, women:

- Have worse access to healthcare (Langer et. al, 2015) to treat the illnesses from which they suffer as a result of being malnourished.
- Have fewer economic opportunities (UN Women, 2018) with which to compensate for the lower lifetime earnings associated with malnutrition.
- Are less likely to attend school (UN Women, 2012) to help them get beyond the cognitive delays malnutrition often causes.

**The barriers that keep women from accessing institutions are multiplied by malnutrition, which reinforces women's oppression in all aspects of their lives.**

Women have unique nutritional needs compared to men -- especially during pregnancy and adolescence, when nutrients such as iron and folic acid are particularly important to their health and that of their baby. Despite their higher nutritional requirements, women often face discrimination that prevents them from accessing the nutritious foods they need (FAO et al. 2019). Women and girls frequently lack control over household spending decisions and eat last and least in their families (WFP 2019). In times of crisis, mothers often eat less to generate additional food for their children, and girl children often go without food before boy children (WFP 2019), especially because boy children are more likely to attend school (UN women, 2012) where they are often the beneficiaries of school feeding programs (Gelli 2015).

**We know that a well-nourished child is one-third more likely to escape poverty. They will learn better in school, be healthier, and grow into productive contributors to their economies. Good nutrition provides the brainpower – the 'grey matter infrastructure' – to build the economies of the future.**

**Jessica Fanzo,**

Bloomberg Distinguished Associate Professor  
of Global Food and Agriculture Policy and Ethics  
at Johns Hopkins University

Not only does this unequal access make girls and women more susceptible to malnutrition and its life-long consequences in their own lives, but malnourished women are much more likely to give birth to children who are also malnourished. This cycle of vulnerability passes along the burden of underdevelopment to the next generation – especially to their daughters who have fewer opportunities to recover after they are born.

## **How better nutrition can be a tool for women and girls to claim their rights**

Gender equality and good nutrition are mutually reinforcing. A growing body of evidence shows that gender inequality is a large factor in women's and girls' malnutrition, and that introducing women's empowerment components into nutrition programming can improve the impact of standard nutrition interventions (ADB, 2013; Tayal, 2019). However, not only are empowered women more likely to access the nutrients they need, but well-nourished women and girls are healthier, more productive, and more likely to finish school, be economically independent, and have healthy babies. By leveraging targeted nutrition interventions as a key part of gender equality programming, women's empowerment actors can realistically and cost-effectively boost their investments and move the world back on track to reaching SDG 5.

Gender equality is a multi-faceted issue that has many definitions and outcome targets. This framing document considers three outcomes of interest identified in the World Economic Forum's annual Global Gender Gap Report (GGGR):

- **Health and Survival**
- **Economic Participation and Opportunity**
- **Educational Attainment<sup>3</sup>**

These three outcomes are both essential to achieving gender equality and responsive to nutrition interventions. Coupled with women's empowerment programming, the specific nutrition interventions outlined below have the potential to significantly increase progress in achieving women's empowerment targets.

---

<sup>3</sup> The Global Gender Gap Report includes a fourth, equally important outcome of interest: women's political empowerment. It has not yet been demonstrated that better nutrition directly assists women to claim their political rights. However, it is reasonable to argue that taken together, the improved cognition, productivity, and health associated with good nutrition could also, in time, help close the gap on women's political empowerment.



From even before a girl is born, good nutrition is a crucial component in supporting her lifelong right to **Health and Survival**, allowing women to live longer, better lives.

## Health and Survival: How nutrition can help women claim their rights

Good nutrition is an essential building block of women's and girls' right to good health and extended lifespan. Malnutrition contributes directly to 45% of young child deaths annually (WHO 2019b). Undernourished infants and toddlers are susceptible to catching more cases, and more serious cases, of diarrhea, malaria, pneumonia, and a host of other diseases (WHO 2019b). Diarrhea, the deadliest childhood disease in the world, is a key example. A malnourished child is 37% more likely to get diarrhea, and when they do get it, they have it for an average of 73% longer than their well-nourished peers. Conversely, a child's chance of surviving an episode of diarrhea increases by as much as 53% with even minimal improvement to nutrition (Walson and Berkley, 2018).

Even if girls escape malnutrition as they grow older, they remain vulnerable to illness throughout their lives, including facing increased susceptibility to obesity and non-communicable diseases such as diabetes (WHO and 1,000 Days, 2014).

Good nutrition is also key to healthy pregnancies and reproductive health. Women who are malnourished during pregnancy are far more likely to join the 810 women who die from preventable causes related to pregnancy and childbirth every day (WHO, 2019a). Mothers who are malnourished are also much more likely to give birth to malnourished children, perpetuating an inter-generational cycle of poverty and ill health. This is especially true for poorly nourished female children, who are more likely to suffer from diet-related NCDs than stunted boys (Langer et. al. 2015)

Ensuring women have the support they need to nourish themselves and their babies from pregnancy until the child's second birthday will not only help moms and babies recover more often and more quickly from illness, but it will also prevent them from contracting deadly diseases in the first place. A small nutrition investment in women and children can stave off much higher health costs down the line.

### ► Proven Solutions: Streamlining Wasting Treatment

One of the most deadly forms of malnutrition is acute malnutrition, or wasting, which occurs when an individual is too thin for their height. Research increasingly shows that shorter-term acute malnutrition episodes are interrelated with stunting: they not only drastically increase an individual's likelihood to die, but also affect an individual's health for the rest of their lives (Wells et. al. 2019).

Children suffering from wasting are often treated with specialized life-saving therapeutic foods. But scaling up other proven nutrition interventions can help prevent wasting from occurring in the first place. Cost-effective preventative interventions include: access to breastfeeding counseling; affordable, high-quality prenatal vitamins for women; wider availability of fortified seeds for smallholder farmers; and ensuring everyone can enjoy a diverse, nutritious diet. Rolling out strong preventative initiatives, while also ensuring safety nets exist to help those

who are already wasted, will help women and girls lead longer, healthier lives.

Currently, despite knowing exactly how to treat acutely malnourished children, global coverage rates for wasting treatment are only at 20%, meaning that 80% of the children who need it are not receiving any treatment (Moran 2018). These low coverage rates, along with other gaps in nutrition programming, mean that between 2012 and 2020, **9.6 million children died from malnutrition across only 25 countries** (USAID, 2019).

Though acute malnutrition overwhelmingly affects children, a variety of institutional and cultural factors mean that wasting also takes a huge toll on women, who are much more likely than men to be a sick child's primary caretaker (Harris, 2014). Children under 5 who are acutely malnourished and receiving outpatient treatment require weekly





monitoring and specially formulated therapeutic foods to recover to healthy weights. Currently, they can only obtain this treatment from health facilities that are often far from the most vulnerable families (Wong et. al. 2017).

Institutional inefficiencies and a lack of funding for widespread wasting treatment place a huge burden on mothers, who often take time away from their work to walk with their children to the nearest health facility to obtain these medications. Health facilities are often closed or out of stock, meaning mothers must often make this journey multiple times before their child receives treatment (UNICEF et. al. 2012).

The nutrition community is championing innovations and policy reforms that could expand this coverage dramatically, but we need more voices dedicated to championing women's and girls' health through reduced rates of acute malnutrition.

#### **Example ways to work with the global nutrition community to reduce rates of wasting:**

- Ensuring initiatives such as lactation counseling and micronutrient supplementation help prevent children from ever becoming wasted.
- Promoting exclusive breastfeeding for the first six months (see Proven Solutions: Breastfeeding Counseling, page 20).
- Championing increased coverage of acute malnutrition treatment by advocating for implementing agencies to:
  - Simplify treatment protocols
  - Empower community health workers to conduct community management of wasting
  - Train health workers to identify and intervene in moderate cases of acute malnutrition before they become severe.
- Working with suppliers, governments, and community leaders to improve therapeutic food supply chain reliability.

## Nutrition + Women's Health and Survival

Malnutrition is the root cause of many health problems, including:



73% of deaths caused by diarrhea in children under 5.<sup>1</sup>



44% of deaths caused by pneumonia in children under 5.<sup>2</sup>



11 million deaths from non-communicable diseases every year.<sup>4</sup>



Lifelong mental health and behavioural challenges.<sup>5</sup>



45% of deaths from severe neonatal infections.<sup>3</sup>



80% of anemia cases affecting almost half of the world's pregnant women.

Starting before conception, good nutrition is a critical building block of women's and girls' health. Undernourished infants and toddlers are susceptible to catching both more and more serious cases of diarrhea, malaria, pneumonia, and a host of other diseases (WHO 2019b). For example, a malnourished child is 37% more likely to get diarrhea, the deadliest childhood disease in the world, and when they do get it, they have it for an average of 73% longer than their well-nourished peers. Conversely, a child's chance of surviving an episode of diarrhea increases by as much as 53% with even minimal improvement to nutrition (Walson and Berkley, 2018).

Malnutrition contributes directly to 45% of young child deaths annually (WHO 2019b). The girls and women who survive childhood malnutrition remain vulnerable to illness throughout their lives, including facing increased susceptibility to obesity and non-communicable diseases such as diabetes later in life (WHO and 1,000 Days, 2014).

<sup>1,2,3</sup> Acting on the Call, 2019, USAID;

<sup>4</sup> GBD 2017 Diet Collaborators, Health effects of dietary risks in 195 countries, 2019, The Lancet;

<sup>5</sup> Galler et. al. Infant malnutrition is associated with persisting attention deficits in middle adulthood, 2012, The Journal of Nutrition

## Case study: How good nutrition improves women's health

Good nutrition is also key to healthy pregnancies and reproductive health. Women who are malnourished during pregnancy are far more likely to join the 810 women who die from preventable causes related to pregnancy and childbirth every day (WHO, 2019a), and today, malnutrition is the root cause of 20% of maternal deaths (USAID, 2019). Mothers who are malnourished are also much more likely to give birth to malnourished children, perpetuating an inter-generational cycle of poverty and ill health. This is especially true for their poorly nourished female children, who are more likely to suffer from diet-related NCDs than stunted boys (Langer et. al. 2015)

Ensuring women have the support they need to nourish themselves and their babies from pregnancy until the child's second birthday will not only help moms and babies recover more often and more quickly from illness, but it will also prevent them from contracting deadly diseases in the first place. A small nutrition investment in women and children can stave off much higher health costs down the line.



By boosting individual workforce participation and earning potential, good nutrition has a proven positive impact on women's full and equal **Economic Participation and Opportunity**.



## Economic Participation and Opportunity: How nutrition can help women claim their rights

The right of women to equal economic participation and earnings is both a matter of justice on its own and an important tool for women to claim power and rights in other areas. Many basic rights are impeded by economic barriers. For example, access to education and health services often requires fees to be paid. And political and decision-making power are often influenced by who controls key economic resources—from the household to the national level.

**Stunted children today lead to stunted economies tomorrow. Sub-Saharan Africa alone loses 25 billion dollars a year because of poor nutrition. At a continental level, Africa loses about 11% of its GDP because of poor nutrition. The evidence, therefore, is very clear – boosting nutrition will boost economies.**

Akinwumi Adesina,  
Director of the African Development Bank

Nutrition interventions produce some of the highest returns on investment (ROIs) compared to other development sectors (Kydland et. al., 2015). Many of these returns accrue directly to the better-nourished individual. A child who is well-nourished during the 1,000 days from pregnancy through its second birthday will earn significantly more than their poorly-nourished peers. One study in Barbados found that malnourished children earn half of what their well-nourished peers do by the time they are 40 years old (Galler et. al., 2012). The gap in earnings also widens as time goes on (Hoddinott et. al. 2013).

These benefits accrue to all children, but they arguably have an outsized impact on women and girls, who are much more likely to face poverty than men and boys. Malnutrition keeps these women and girls from reaching their earning

potential, and children who are stunted (a key indicator of undernutrition) are 33% less likely to escape poverty as adults (Hoddinott et. al, 2011).

The tested, cost-effective, and ready-to-scale nutrition interventions available today have a proven impact on individual earning potential. The way we tackle nutrition is already having a huge impact on women women's and girls' economic empowerment (Kakietek 2017). By expanding the reach of current nutrition programming, that impact could increase dramatically.



## ► Proven Solutions:

### Treating Iron Deficiency Anemia

Anemia is a condition where a person's blood is limited in its capacity to deliver oxygen to the body. This causes a variety of symptoms, particularly fatigue and physical weakness. Anemia rates are on the rise (GNR 2018), affecting as many as half of pregnant women in low-and-middle-income countries today (Daru et. al. 2018). Though anemia has a number of causes, malnutrition is an underlying risk factor in the majority of cases. Iron deficiency, which is a form of malnutrition, causes around half of anemia cases (Lopez et. al. 2016). Thankfully, there are proven, scalable, and cost-effective interventions that can help women avoid iron deficiency anemia.

Iron is found in meat, fish, other animal source foods such as eggs and milk, and legumes such as peanuts and soybeans. Biologically, women and girls need higher concentrations of iron than men and boys to keep them healthy during specific life stages, but they often have lower access to expensive, iron-rich foods. Today, 67% of non-elderly adults with anemia are women (WHO, 2008).

On top of causing a variety of health concerns such as chronic kidney disease, heart failure, cancer, and inflammatory bowel disease (Lopez et al. 2016), and making a woman 1.86 times more likely to die during pregnancy and childbirth (Daru et. al. 2018), iron deficiency anemia has a detrimental effect on women's economic status.

#### **Anemia creates two key barriers to women's economic success:**

1) Physical: anemia is associated with fatigue and lethargy, which impairs physical capacity. This puts anemic women at a huge physical disadvantage in the workplace, especially in jobs requiring manual labor. For those working in heavy manual labor, such as smallholder farming, treating anemia with iron therapy is associated with up to a 17% increase in productivity (Horton, 2003).

2) Mental: anemia stunts cognitive development and capacity, taking a toll on lifetime earnings. People with iron deficiency anemia who lack a formal education tend to have 2.5% lower wages due their cognitive ability (Alderman & Horton, 2007).

One way to address iron deficiency anemia, especially during times of increased requirement, is through supplementation. Ensuring pregnant women have access to multiple micronutrient supplements (MMS), which contain anemia-fighting levels of iron, is an important way to help mothers ensure an equal chance at economic empowerment for their children. Two other key interventions targeting anemia rates are fortification, through which iron is added to staple foods such as flour, and biofortification, where certain crops are bred to contain higher concentrations of key nutrients such as iron (Hunt, 2002). Nutrition actors work with governments, UN agencies, and non-profits to ensure all women have access to these cost-effective, life-saving interventions.

Overall, the economic costs of anemia are staggering. The losses from iron deficiency in South Asia alone are estimated at close to US \$5 billion annually, with most of those losses caused by cognitive deficits (Ross and Horton, 1998). Since women shoulder the vast majority of the iron deficiency anemia burden, they also disproportionately shoulder these economic costs.

#### **Example ways to work with the global nutrition community to reduce rates of iron deficiency anemia:**

- Supporting multiple micronutrient supplementation as part of routine antenatal care.
- Mobilizing communities and social marketing to build awareness of the value of iron supplementation in women of reproductive age.
- Working with community groups and local leaders to break down cultural barriers which prevent women from accessing animal-sourced foods such as meat, fish, eggs, and milk, especially for children under 5 and pregnant and lactating women.
- Partnering with local vendors to increase the availability and lower the prices of animal-sourced foods and legumes.
- Supporting large scale fortification and biofortification efforts.

## Case studies: Over 50 years of evidence

Multiple studies link nutrition interventions in utero and in early childhood directly to better economic outcomes in adulthood. These studies often randomly select children to receive either a nutrition supplement or a placebo and then follow them over the course of their lives. Thus, data collection is ongoing, but the trend is clear: better nourished children earn significantly more than their poorly-nourished counterparts.

The first large-scale study to test this hypothesis took place in Guatemala, where thousands of children received either a high-protein supplement or a placebo from 1969 to 1977. By following up on these children throughout their lives, researchers have been able to note differences in life outcomes between the two groups. As they entered adulthood, men who received the supplement earned an average of 46% more than their counterparts (Hoddinott et. al. 2008).

**A 2017 analysis showed that, on average, a 1-centimeter increase in height is associated with a 4% higher income for men and a 6% higher income for women**

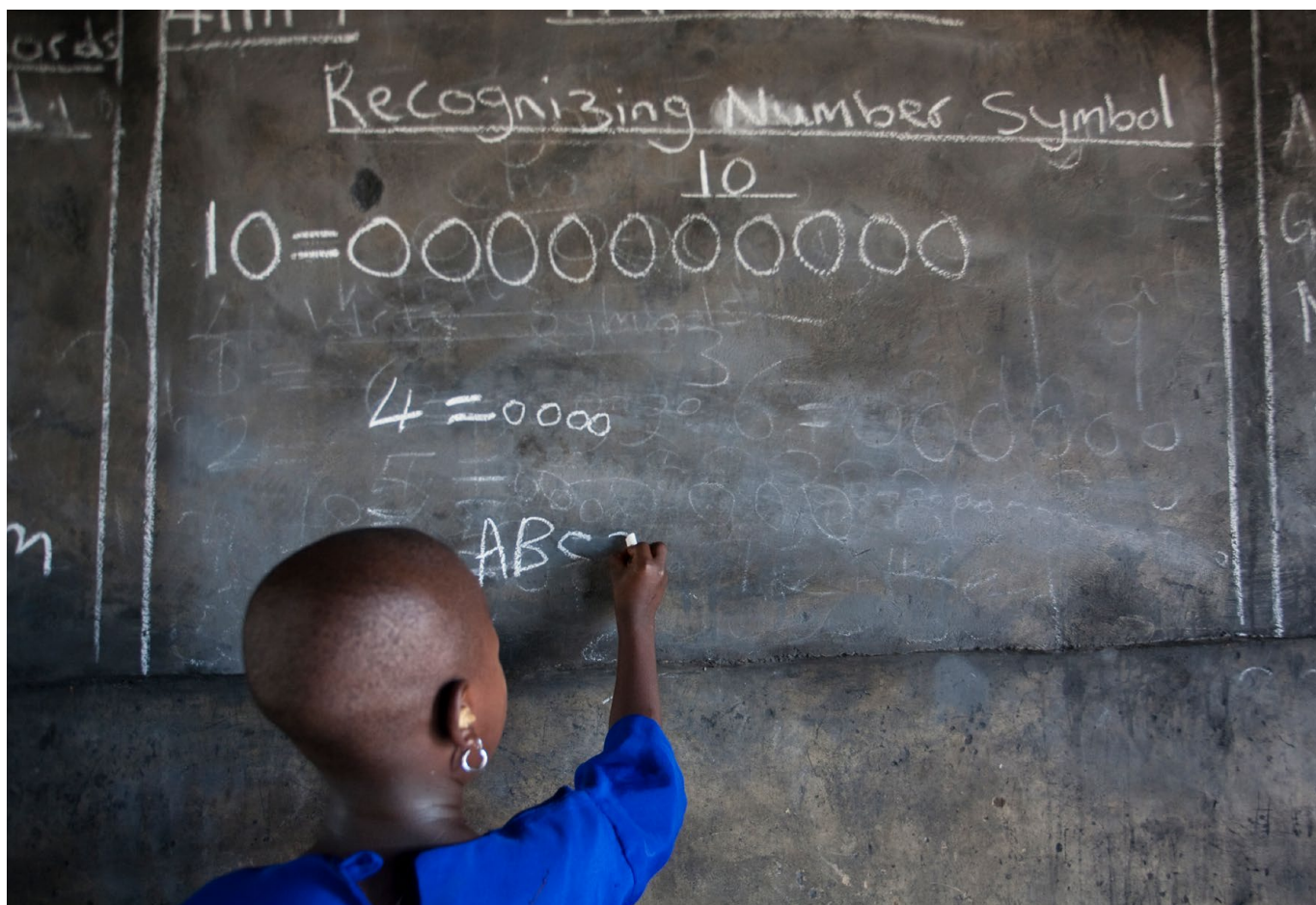
A separate study, which followed malnourished children in Barbados along with a cohort of healthy children from comparable backgrounds, had similar findings. Though the malnourished children made full recoveries and completed the same amount of primary schooling as the healthy children, they experienced long-term cognitive impairment. Over the course of their lives, the malnourished children not only went on to earn significantly less than the healthy children, but the socioeconomic gap also widened as time went on (Galler 2012).

More recently, researchers have begun to compile individual studies and draw conclusions across the various results. Looking across studies, a 2017 analysis showed that, on average, a 1-centimeter increase in height is associated with a 4% higher income for men and a 6% higher income for women (McGovern et. al. 2017). Studies that follow up on actual interventions find even more stark aggregate results: up to 16% higher income for every additional centimeter of height (McGovern et. al. 2017).

Over the course of over 50 years, we have seen consistent evidence that malnourished children earn less throughout the rest of their lives and that this disparity grows over time. Ensuring girls have access to proper nutrition from a young age is a key way to set them up for future economic success.







Access to good nutrition allows girls' brains to develop fully and impacts how well women and girls can perform in school. It also secures their right to equal **Educational Attainment** with men and boys.

## Educational Attainment: How nutrition can help women claim their rights

One of the most important components of gender equality is arming women with the knowledge they need to gain marketable skills, assert themselves, and advocate for their own well-being. Formal education is an important tool in this process. Malnutrition has a significant impact on educational attainment. Well-nourished children complete an average of 4.64 grades more school than stunted children do (Hoddinott et. al (b), 2013).

**Nutrition is one of the best drivers of development: it sparks a virtuous cycle of socioeconomic improvements, such as increasing access to education and employment.**

**Kofi Annan,**  
former UN Secretary-General

The most critical role that nutrition plays in a woman's educational attainment is physiological, by enabling her brain to grow to its full potential. The causal links between malnutrition and stunted cognitive development are well-established, with stunted cognitive development being perhaps the most devastating lifelong symptom of childhood hunger. Studies have found a consistent, large, and negative impact of malnutrition on cognition, resulting in significantly worse performance on reading and non-verbal cognitive skills tests (Hoddinott et. al (b), 2013). A forty-year-study of individuals in Barbados found that **a severe episode of malnutrition in the first year was associated with a 15 point decrease in IQ<sup>4</sup> and that the previously malnourished children were 9 times more likely to have an IQ score in the intellectual disability range (< 70)<sup>5</sup>** (Waber et. al. 2013). Malnutrition's effect on early brain development is also associated with emotional and behavioral issues, including depression, ADHD, and anxiety, that last into adulthood (Waber et. al. 2011; Walker, 2007).

<sup>4</sup> This IQ decrease persisted through adolescence and into adulthood.

<sup>5</sup> This lowered IQ is also associated with lower lifetime earnings, with researchers estimating that a half standard deviation change in IQ impacts earnings by 5% in either direction (Alderman and Horton, 2007).



In many communities, good nutrition has a much stronger impact on girls' education than it does on boys', with one study finding that improving nutrition increases a boy's likelihood of ever attending school by 4% compared to 19% among girls (López-Casanovas et. al., 2005, p. 183). Another study looking at children who received nutrition treatment found that, 25 years later, women who had been treated as girls had been able to complete more schooling, and faster, than their male counterparts (Maluccio, 2009). Thus, access to good nutrition in early childhood equips women and girls with the cognitive capacities and strong mental health they need to achieve their educational goals.

Beyond correlating highly with increased formal education and cognitive ability, knowledge of and access to good nutrition is empowering in itself. Nutrition education gives disenfranchised groups such as women the power to make more active decisions within food systems that rarely serve their best interests (CARE, 2016). It allows women to more confidently make decisions about their bodies and their families. By giving women the tools to make informed decisions around their nutrition and the nutrition of their new infants, they can more confidently navigate this challenging time and will be less susceptible to manipulation and exploitation (Seals Allers, 2017).

## ► Proven Solutions: Breastfeeding Counseling

The WHO recommends that caregivers feed their infants nothing but breast milk for the first 6 months after they are born, followed by supplementary breastfeeding till at least two years of age (WHO 2011). Breast milk provides babies with every nutrient they need to grow and develop, and it also protects them from infections and diseases. In addition to its health benefits, breastfeeding has other advantages over infant formula including:

- In contrast to bottle feeding, breastfeeding is safe and sanitary, even in living conditions where sanitization is difficult.
- Breast milk is not something women need to purchase, which frees up their income for other costs.

Infants who are not breastfed are more likely to grow up stunted, contract non-communicable diseases like asthma and diabetes (GBC 2017), and are up to 10.5 times more likely to die of diarrhea than breastfed babies (Lamberti et al. 2011). In addition to the benefits that allow girls to get the best start at a healthy life, breastfeeding offers numerous benefits to mothers as well. Women who breastfeed are less likely to develop breast cancer and other diseases later in life (GBC 2017). Breastfeeding also helps to naturally promote birth spacing, since a woman who is breastfeeding is much less likely to become pregnant again than she is after she stops (Kennedy et al, 1989). Despite the many benefits of breastfeeding, globally only 37% of infants are exclusively breastfed, contributing to more than 823,000 child deaths and 20,000 maternal deaths from cancer (Victora et. al. 2016).

Unfortunately, many women around the world contend with numerous barriers that make exclusive breastfeeding inaccessible. These barriers include insufficient time and workplace accessibility for working mothers, lack of trained lactation support workers, and persistent misinformation such as the myth that mothers must supplement breast milk before 6 months to keep their infants healthy (Kavle, 2017). Many women are also inundated with aggressive and misleading marketing campaigns persuading them that formula is the best or only option for healthy babies. The nutrition community works with policymakers, communities, and mothers to increase rates of

exclusive breastfeeding by providing the information and support women need to make informed decisions.

### **Example ways to work with the global nutrition community to help women achieve their breastfeeding goals:**

- Limiting marketing for infant formula and encouraging companies to adhere to the International Code of Marketing of Breastmilk Substitutes.
- Advocating for paid leave so that mothers have time exclusively breastfeed.
- Helping to enact the Baby Friendly Hospital Initiative to make sure new mothers have the support they need to begin breastfeeding.
- Organizing community-based peer-to-peer and group breastfeeding counseling and ensuring messaging is tailored to be effective within different cultural contexts.
- Helping to sensitize communities and families about optimal breastfeeding and how to support breastfeeding mothers.
- Ensuring lactation support is available to women across income levels.

**Breastfeeding shows us all the ways, as women, that we have been imagined, constructed, created, and controlled by economics, science, the media...[,and] the outcome has a profound effect on the whole world from the economics of squandering an irreplaceable resource to the personal and societal costs of compromised infant and maternal health outcomes.**

Kimberly Seals Allers,  
author of *The Big Letdown*



## Case Study: Women's access to accurate information on breastfeeding in the United States

Infant formula is a \$50 billion global industry (UNICEF 2017). Since research shows that mothers are most likely to continue feeding their babies the same brand of formula after they try it once (Fein 2009), companies are incentivized to ensure new mothers access their products first. In hopes of gaining loyal customers, formula companies have spent decades investing millions of dollars targeting new and expectant moms in health care settings.

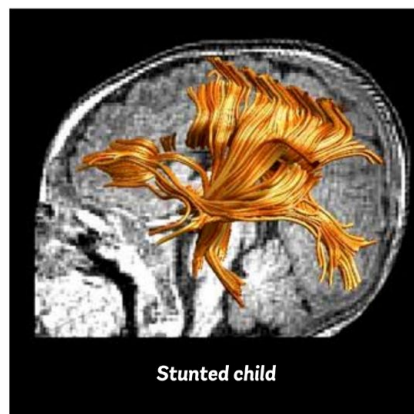
While hospitals need to give some babies infant formula for medical reasons, formula companies often partner with hospitals to target new moms with free "gifts" of formula. These formula companies know that once a mom starts using even just a little bit of formula, her own milk supply decreases, which means she has to give her baby even more infant formula and less breast milk. This starts a vicious cycle. A mother's milk production works on a supply and demand basis (the more mom breastfeeds, the more milk she will produce), so introducing infant formula unnecessarily in the first few days of life may very well lead to reliance on formula (Piwoz and Huffman, 2015).

When new mothers run out of the "free" formula samples the hospital gives them, they are forced to buy expensive infant formula at full price to feed their hungry babies. So those "free" samples end up costing many moms \$2,400 in the first year (Grayson, 2016) as they continue feeding their babies infant formula. Today, two-thirds of American mothers who intend to exclusively breastfeed are not meeting their goals (Perrine et. al. 2012). According to the Centers for Disease Control and Prevention, 75% of U.S. hospitals give healthy babies some formula in the first days of life - *even when moms say they want to breast-feed* (Perrine, 2015).

Formula marketing campaigns are also often misleading, implying that formula is better for babies than breast milk and that it is the best way to ensure babies grow up healthy and successful (Piwoz and Huffman, 2015). New mothers who want to make the best choice for their babies often have trouble determining what is true, especially when there are not reliable sources of information on breastfeeding.

Without strong measures to limit the way formula companies target and market to women and their families, women often do not have the tools they need to make informed decisions about infant feeding. **In most countries around the world it is illegal for infant formula companies to market their products**, according to the [World Health Organization \(WHO\) International Code of Marketing Breast-milk Substitutes](#). However, the United States has not yet signed on to this code and therefore lacks the legal framework to regulate how and what information women access about breastfeeding. The inaccessibility of reliable breastfeeding information robs women of their agency and ability to make informed choices about their bodies.

**Gray-Matter Infrastructure:**  
**A Healthy, Cared-for Child Has a More Fully Developed Brain than a Stunted Child**



Stunted child



Healthy, well-nourished child

Source: Unleashing Gains in Economic Productivity with Investments in Nutrition, World Bank Group

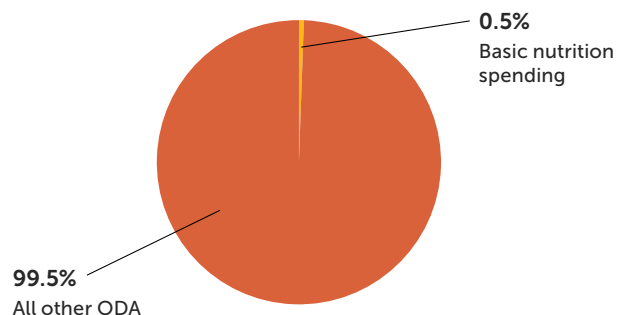
## Nutrition is an underleveraged resource

Nutrition interventions produce some of the highest ROIs compared to other development sectors (Kydland et. al., 2015). In 2012, a panel of the world's leading economists set out to determine the "best ways of advancing global welfare, and particularly the welfare of developing countries" (Copenhagen Consensus, 2012). Out of all the potential interventions they examined, the panel identified the fight against malnutrition as the most important and cost-effective investment (Lomborg, 2014).

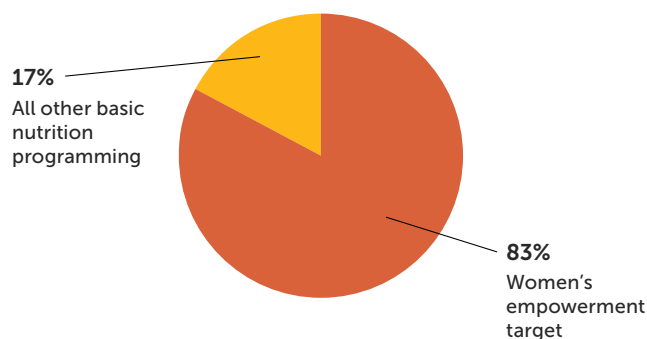
Despite all these benefits and the cost-effectiveness of nutrition interventions, nutrition interventions are often absent from global development efforts. In 2016, less than 0.5% of all government ODA went to nutrition (GNR, 2018). It is time that changed.

Nutrition programming is already heavily focused on empowering women. In 2017, **83% of basic nutrition programming targeted gender equality and women's empowerment as a principle or significant outcome of interest**. Scaling the nutrition interventions we have on the ground today gives us an opportunity to grow these outcomes and make a significant step towards more empowered, well-nourished women and girls.<sup>6</sup>

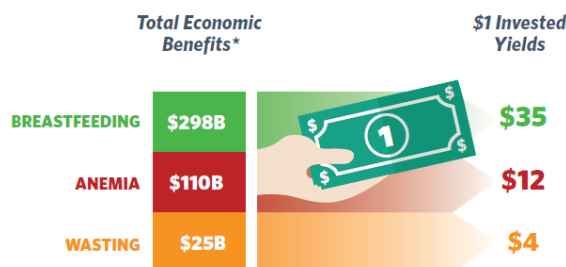
% of all official development assistance (ODA) spending on basic nutrition interventions



% of basic nutrition interventions with women's empowerment as a principal or significant target



Investments to Meet the Global Nutrition Targets Have Enormous Economic Returns



\*Total economic benefits in low- and middle income countries over 10 years for women and over the productive lives of children who benefit from these interventions.

<sup>6</sup> As measured by the percent of Bilateral Allocatable Official Development Assistance OECD DAC country funding for 'basic nutrition' that were coded as principle or significant under the 'Aid projects targeting gender equality and women's empowerment (CRS)' analysis: [https://stats.oecd.org/Index.aspx?DataSetCode=DV\\_DCD\\_GENDER](https://stats.oecd.org/Index.aspx?DataSetCode=DV_DCD_GENDER)

## Conclusion

The nutrition and women's empowerment sectors can be mutually reinforcing, and it is time to link them more intentionally. While better nutrition cannot solve all the challenges women and girls face to claim equal rights, it can provide them with important tools to support their efforts. Conversely, gaining access to better nutrition requires overcoming economic, institutional, and social barriers that deprive women and girls of their right to good nutrition.

**We need to take better care of women and children to make sure that future generations live healthier lives. We can begin that process by identifying and implementing public health policies that will improve nutrition for all mothers, infants, and children. Ultimately, this will benefit us all, by helping to create a more equitable and healthy society."**

Judith Finlayson,  
You Are What Your Grandparents Ate

Targeted, cost-effective nutrition interventions are available and ready to scale up today. The interventions cited in this paper have years of research showing that, even in the presence of human error and adverse circumstances, they have a substantial impact in real-world settings. In many cases this impact is immediately apparent: children go from being sick to healthy, women go from listless to alert, and infants go from dying to thriving.

Despite all these benefits and the cost-effectiveness of nutrition interventions, women's health spending rarely focuses on nutrition. In 2016, less than 0.5% of government ODA went to nutrition (GNR, 2018).

This needs to change. Unequal access to good nutrition prevents women from developing to their full potential, and it directly compromises their opportunities to achieve equal health, education, and earning outcomes. Embedding a few relatively inexpensive, key nutrition interventions in existing women's empowerment programming could yield massive returns to women around the world and help correct the nutritional inequality that has kept women and girls from reaching their full potential. Doing this requires nutrition advocates and women's rights activists to explore new ways to link their work together to pursue their common goal of helping women and girls overcome all forms of inequality.

With a decade left to deliver on the Sustainable Development Goals, 2020 is a key time for women's health and empowerment actors to turn their attention to women's nutrition. Over the next 10 years, nutrition investments made today can set up a generation of girls for better health and full cognitive development that will make their educational and economic goals more attainable. More deliberately linking specific, cross-cutting nutrition interventions with context-specific knowledge about gender barriers is an excellent way for women's empowerment actors to boost the effectiveness of their programming.



## Sources

- ADB.2013. "Gender Equality and Food Security: Women's Empowerment as a Tool against Hunger." <https://www.adb.org/sites/default/files/publication/30315/gender-equality-and-food-security.pdf>
- Alderman and Horton. 2007. *The Economics of Addressing Nutritional Anemia*. Nutritional Anemia, edited by Klaus Kraemer, 19–35. Basel, Switzerland: SIGHT AND LIFE. [http://web1.sph.emory.edu/users/hpacho2/ReferencesPublicHealthImpactFortification/SightandLife\\_2007.pdf](http://web1.sph.emory.edu/users/hpacho2/ReferencesPublicHealthImpactFortification/SightandLife_2007.pdf)
- Barcellos, S. H., Carvalho, L. S., & Lleras-Muney, A. 2014. "Child Gender and Parental Investments In India: Are Boys And Girls Treated Differently?" *American Economic Journal. Applied economics* 6(1), 157–189. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3933178/#FN28>
- CARE. 2016. "Beyond Productivity: Delivering Impacts on Food and Nutrition Security in a Changing World: Lessons from CARE's Programming 2013–2016." CARE Knowledge Management and Research. Climate [https://www.care.org/sites/default/files/documents/beyond\\_productivity.pdf](https://www.care.org/sites/default/files/documents/beyond_productivity.pdf)
- Copenhagen Consensus. 2012. "Expert Panel Findings." [https://www.copenhagenconsensus.com/sites/default/files/outcome\\_document\\_updated\\_1105.pdf](https://www.copenhagenconsensus.com/sites/default/files/outcome_document_updated_1105.pdf)
- Daru, Jahnavi et. al.2018. "Risk of Maternal Mortality in Women with Severe Anaemia During Pregnancy and Postpartum: A Multilevel Analysis." *Lancet Glob Health* 2018 (6): 548–54. [https://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X\(18\)30078-0.pdf](https://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(18)30078-0.pdf).
- FAO, IFAD, UNICEF, WFP and WHO. 2019. "The State of Food Security and Nutrition in the World. Safeguarding against economic slowdowns and downturns." <http://www.fao.org/3/ca5162en/ca5162en.pdf>.
- FAO. 2013. "State of Food and Agriculture: Food Systems for Better Nutrition." <http://www.fao.org/3/i3300e/i3300e.pdf>
- Figueiredo, A. C. M. G., Gomes-Filho, I. S., Silva, R. B., Pereira, P. P. S., Mata, F. A. F. D., Lyrio, A. O., ... Pereira, M. G. (2018). "Maternal Anemia and Low Birth Weight: A Systematic Review and Meta-Analysis." *Nutrients* 10 (5): 601. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5986481/>
- Fein, Sara. et. al. 2009. "Impact of Marketing on Infant Formula Choice and Switching. Marketing and Public Policy Conference Proceedings." <https://www.ama.org/wp-content/uploads/2019/02/2009-ama-mppc-proceedings.pdf#page=59>
- Fink et. al. 2016. "Schooling and Wage Income Losses Due to Early-Childhood Growth Faltering in Developing Countries: National, Regional, and Global Estimates." *American Journal of Clinical Nutrition* 2016 (104): 104–12. <https://spiral.imperial.ac.uk/8443/bitstream/10044/1/38611/2/Am%20J%20Clin%20Nutr-2016-Fink-104-12.pdf>
- Food Security Information Network (FSIN). 2019. "Global Report on Food Crises." [http://www.fsinplatform.org/sites/default/files/resources/files/GRFC\\_2019-Full\\_Report.pdf](http://www.fsinplatform.org/sites/default/files/resources/files/GRFC_2019-Full_Report.pdf)
- Galler, J. R., Bryce, C., Waber, D. P., Zichlin, M. L., Fitzmaurice, G. M., & Eaglesfield, D. 2012. "Socioeconomic Outcomes in Adults Malnourished in the First Year of Life: A 40-year Study." *Pediatrics* 130(1): 1–7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3382923/>.
- GBD 2017 Diet Collaborators. 2017. "Health Effects of Dietary Risks in 195 Countries, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study." *Lancet* 2019 (393): 1958–72. [https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(19\)30041-8.pdf](https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(19)30041-8.pdf).
- GBC. 2017. "Nurturing the Health and Wealth of Nations: The Investment Case for Breastfeeding. Global Breastfeeding Collective." <https://www.who.int/nutrition/publications/infantfeeding/global-bf-collective-investmentcase.pdf?ua=1>.
- Gelli, Aulo. 2015. "School Feeding and Girls' Enrollment: The Effects of Alternative Implementation Modalities in Low-Income Settings in Sub-Saharan Africa." *Front Public Health* 2015 (3): 76. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4440399/>.
- GNR. 2018. "Global Nutrition Report 2018: Shining a light to spur action on nutrition." <https://globalnutritionreport.org/reports/global-nutrition-report-2018/>
- Global Panel. 2016. "The Cost of Malnutrition: Why Policy Action is Urgent". <https://glopan.org/sites/default/files/pictures/CostOfMalnutrition.pdf>
- Goodridge, Donna, and Darcy Marciniuk. 2016. "Rural and Remote Care: Overcoming the challenges of distance." *Chronic Respiratory Disease* 13(2): 192–203. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5734598/>
- Grayson, Jennifer. 2016. *Unlatched: The Evolution of Breastfeeding and the Making of a Controversy*. New York: HarperCollins.
- Halim, N., Spielman, K., & Larson, B. (2015). "The Economic Consequences of Selected Maternal and Early Childhood Nutrition Interventions in Low- and Middle-income Countries: A Review of the Literature, 2000–2013." *BMC Women's Health* 15 (33): 1–13 <https://doi.org/10.1186/s12905-015-0189-y>
- Hoddinott et. al. 2008. "Effect of a Nutrition Intervention During Early Childhood on Economic Productivity in Guatemalan Adults." *The Lancet* 371 (9610): 411–416. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(08\)60205-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60205-6/fulltext)
- Hoddinott et. al. 2011. "The Consequences of Early Childhood Growth Failure Over the Life Course. IFPRI Discussion Paper 01073." <https://core.ac.uk/download/pdf/6314946.pdf>.
- Hoddinott et. al. (a). 2013. "The Economic Rationale for Investing in Stunting Reduction." *Maternal & Child Nutrition* 9 (2): 69–82. <https://onlinelibrary.wiley.com/doi/full/10.1111/mcn.12080>

- Hoddinott et. al (b). 2013. "Adult Consequences of Growth Failure in Early Childhood." *The American Journal of Clinical Nutrition* 98 (5): 1170–1178. [https://academic.oup.com/ajcn/article/98/5/1170/4577215?ikey=7c099734c7f23c9645f0163e-2b22a3120e1abc45&keytype2=tf\\_ipsecsha](https://academic.oup.com/ajcn/article/98/5/1170/4577215?ikey=7c099734c7f23c9645f0163e-2b22a3120e1abc45&keytype2=tf_ipsecsha).
- Horton, Susan and J Ross. 2003. "The Economics of Iron Deficiency." *Food Policy* 28 (1): 51–75. <https://www.sciencedirect.com/science/article/abs/pii/S0306919202000702#!>
- Horton, Susan, and John Hoddinott. 2014. "Benefits and Costs of the Food and Nutrition Targets for the Post-2015 Development Agenda." [https://www.copenhagenconsensus.com/sites/default/files/food\\_security\\_and\\_nutrition\\_perspective\\_-\\_horton\\_hoddinott\\_0.pdf](https://www.copenhagenconsensus.com/sites/default/files/food_security_and_nutrition_perspective_-_horton_hoddinott_0.pdf)
- Joseph M. Hunt. 2002. "Reversing Productivity Losses from Iron Deficiency: The Economic Case." *The Journal of Nutrition* 132 (4): 794–801. <https://academic.oup.com/jn/article/132/4/794S/4687216>
- Jayachandran, Seema, and Ilyana Kuziemko. 2011. "Why Do Mothers Breastfeed Girls Less Than Boys? Evidence and implications for child health in India." *The Quarterly Journal of Economics* 2011 (126): 1485–1538. <https://pdfs.semanticscholar.org/5260/6c7ebb50ff3323cfc371a2a54f3d0348df6a.pdf>
- Kakietek, Jakub, Julia Dayton Eberwein, Dylan Walters, and Meera Shekar. 2017. *Unleashing Gains in Economic Productivity with Investments in Nutrition*. Washington, DC: World Bank Group .
- Kavle, Justine A, Elizabeth LaCroix, Hallie Dau, and Cyril Engmann. 2017. "Addressing Barriers to Exclusive Breast-feeding in Low- and Middle-Income Countries: A Systematic Review and Programmatic Implications." *Public Health Nutrition* 20(17): 3120–3134. [https://www.cambridge.org/core/services/aop-cambridge-core/content/view/53EBA65F5D58D16E3E4D32E0FCFA938B/S1368980017002531a.pdf/addressing\\_barriers\\_to\\_exclusive\\_breastfeeding\\_in\\_low\\_and\\_middleincome\\_countries\\_a\\_systematic\\_review\\_and\\_programmatic\\_implications.pdf](https://www.cambridge.org/core/services/aop-cambridge-core/content/view/53EBA65F5D58D16E3E4D32E0FCFA938B/S1368980017002531a.pdf/addressing_barriers_to_exclusive_breastfeeding_in_low_and_middleincome_countries_a_systematic_review_and_programmatic_implications.pdf)
- Kennedy, Kathy, Roberto Rivera, Alan McNeilly. 1989. "Consensus Statement on the Use of Breastfeeding as a Family Planning Method." *Contraception* 39 (5): 477–496. <https://www.sciencedirect.com/science/article/abs/pii/0010782489901030>
- Kydland, Finn, Nancy Stokey and Tom Schelling. 2015. "Nobel Laureates' Guide to Smarter Global Targets to 2030: Prioritizing 19 Targets Instead of the UN's 169 Targets is Equivalent to Doubling or Quadrupling Foreign Aid." [https://www.copenhagenconsensus.com/sites/default/files/outcomedomument\\_col.pdf](https://www.copenhagenconsensus.com/sites/default/files/outcomedomument_col.pdf)
- Lamberti, Laura M, Christa L Fischer Walker, Adi Noiman, Cesar Victora & Robert E Black. 2011. "Breastfeeding and the Risk for Diarrhea Morbidity and Mortality." *BMC Public Health* 11 (15): 1–12. <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-S3-S15>
- Langer et. al. 2015. "Women and Health: The Key for Sustainable Development. 2015. *The Lancet* 386: 1165–210. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)60497-4/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)60497-4/fulltext)
- Lomberg, Bjorn. 2014. *How to Spend \$75 Billion to Make the World a Better Place*. Massachusetts: Copenhagen Consensus Center.
- López, Guillem et. al. 2005. *Health and Economic Growth: Findings and Policy Implications*. Massachusetts: MIT Press Books. Massachusetts Institute of Technology <https://books.google.com/books?hl=en&lr=&id=UKWgBnQgQ2cC&oi=fnd&pg=PA169&ots=ksZWLmY3aY&sig=VjU2Ht5GwljrM77-420I9zeh-vP8#v=onepage&q&f=false>
- Lopez et. al. Iron deficiency anaemia. 2016. *The Lancet* 387 (10021): 907–916. [https://www.thelancet.com/journals/lancet/article/pii/S0140-6736\(15\)60865-0/fulltext#cesec10](https://www.thelancet.com/journals/lancet/article/pii/S0140-6736(15)60865-0/fulltext#cesec10)
- Maluccio, John A. et. al. 2009. "The impact of improving nutrition during Early Childhood Education among Guatemalan Adults." *The Economic Journal* 119 (537): 734–63. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-0297.2009.02220.x>
- McGovern, Mark E, Aditi Krishna, Victor M Aguayo, SV Subramanian. 2017. "A Review of the Evidence Linking Child Stunting to Economic Outcomes." *International Journal of Epidemiology* 46 (4): 1171–1191. <https://doi.org/10.1093/ije/dyx017>
- Morán, Alvarez J.L., Alé, G.B.F., Charle, P. et al. 2018. "The Effectiveness of Treatment for Severe Acute Malnutrition (SAM) Delivered by Community Health Workers Compared to a Traditional Facility Based Model." *BMC Health Serv Res* 18, (207): 1–10. <https://doi.org/10.1186/s12913-018-2987-z>
- Myatt, Mark et. al. 2018. "Children Who Are Both Wasted and Stunted Are Also Underweight and Have a High Risk of Death: A Descriptive Epidemiology of Multiple Anthropometric Deficits Using Data From 51 Countries." *Arch Public Health* 76 (28): 1–11. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6047117>
- OECD.stat. 2017. "Aid Projects Targeting Gender Equality and Women's Empowerment (CRS)." Accessed 3/16/2020. [https://stats.oecd.org/Index.aspx?DataSetCode=DV\\_DCD\\_GENDER](https://stats.oecd.org/Index.aspx?DataSetCode=DV_DCD_GENDER)
- OECD. 2018. "Aid to Gender Equality and Women's Empowerment: An Overview. OECD DAC Network on Gender Equality." <https://www.oecd.org/dac/gender-development/Aid-to-gender-overview-2018.pdf>
- Olofin et al. 2013. "Associations of Suboptimal Growth with All-Cause and Cause-Specific Mortality in Children under Five Years: A Pooled Analysis of Ten Prospective Studies." *PLOS ONE* 8 (5): e64636. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0064636>

- Perrine, Cria, Kelley S. Scanlon, Ruowei Li, Erika Odom and Laurence M. Grummer-Strawn. 2012. "Baby-Friendly Hospital Practices and Meeting Exclusive Breastfeeding Intention." *Pediatrics* 130 (1): 54-60. [https://pediatrics.aappublications.org/content/130/1/54.long?sso=1&sso\\_redirect\\_count=5&nf-status=401&nftoken=00000000-0000-0000-0000-000000000000&nftstatusdescription=ERROR%3A%20No%20local%20token&nftstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nftstatusdescription=ERROR%3A+No+local+token](https://pediatrics.aappublications.org/content/130/1/54.long?sso=1&sso_redirect_count=5&nf-status=401&nftoken=00000000-0000-0000-0000-000000000000&nftstatusdescription=ERROR%3A%20No%20local%20token&nftstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nftstatusdescription=ERROR%3A+No+local+token)
- Perrine, Cria et. al. 2015. "Vital Signs: Improvements in Maternity Care Policies and Practices That Support Breastfeeding – United States, 2007–2013." Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report. Vol. 64. <https://www.cdc.gov/mmwr/pdf/wk/mm64e1006.pdf>.
- Piwoz, E. G., & Huffman, S. L. 2015. "The Impact of Marketing of Breast-Milk Substitutes on WHO-Recommended Breastfeeding Practices." *Food and Nutrition Bulletin* 36(4), 373–386. <https://doi.org/10.1177/0379572115602174>
- Ritchie, Hannah and Max Roser. 2019. "Gender Ratio. Our World In Data." <https://ourworldindata.org/gender-ratio#how-many-women-are-missing>
- Ross, Jay and Susan Horton. 1998. "Economic Consequences of Iron Deficiency. Micronutrient Initiative." <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/25059/109343.pdf?sequence=1>
- Seals Allers, Kimberly. 2017. *The Big Letdown*. New York: St. Martin's Press
- Tayal, Deeksha. 2019. "Gender Inequality, Reproductive Rights and Food Insecurity in Sub-Saharan Africa – A Panel Data Study." *International Journal of Development Issues* 18 (2): 191-208. <https://www.emerald.com/insight/content/doi/10.1108/IJDI-10-2018-0165/full/html>
- UNFPA. 1994. "Issue 7: Women Empowerment." <https://www.unfpa.org/resources/issue-7-women-empowerment>
- UNICEF/Coverage Monitoring Network/ACF International. 2012. "The State of Global SAM Management Coverage 2012." [https://www.actionagainsthunger.org/sites/default/files/publications/The\\_State\\_of\\_SAM\\_Management\\_Coverage\\_2012\\_0.pdf](https://www.actionagainsthunger.org/sites/default/files/publications/The_State_of_SAM_Management_Coverage_2012_0.pdf)
- UNICEF/WHO. 2017. "Breastfeeding and the International Code of Marketing of Breastmilk Substitutes." Advocacy Brief. Breastfeeding Advocacy Collective. [https://www.unicef.org/nutrition/files/9\\_BF\\_and\\_the\\_Code.pdf](https://www.unicef.org/nutrition/files/9_BF_and_the_Code.pdf)
- UNSG. 2011. "The Empowerment of Rural Women and Their Role in Poverty and Hunger Eradication, Development and Current Challenges. Report of the Secretary-General. Commission on the Status of Women Fifty-sixth session. 27 February-9 March 2012." [https://www.un.org/ga/search/view\\_doc.asp?symbol=E/CN.6/2012/3](https://www.un.org/ga/search/view_doc.asp?symbol=E/CN.6/2012/3)
- UN Women. 2012. "Facts and Figures: Commission on the Status of Women 2012." <https://www.unwomen.org/en/news/in-focus/commission-on-the-status-of-women-2012/facts-and-figures>
- UN Women. 2018. "Facts and Figures: Economic Empowerment." <https://www.unwomen.org/en/what-we-do/economic-empowerment/facts-and-figures>
- USAID. 2019. "Acting on the Call: A Focus on the Journey to Self-Reliance for Preventing Child and Maternal Deaths: United States." [https://www.usaid.gov/sites/default/files/documents/1864/USAID\\_2019\\_AOTC.pdf](https://www.usaid.gov/sites/default/files/documents/1864/USAID_2019_AOTC.pdf)
- Victora, Cesar et. al. 2016. "Breastfeeding in the 21st century: Epidemiology, Mechanisms, and Lifelong Effect." *The Lancet* 387: 475 – 90. [https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(15\)01024-7.pdf](https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)01024-7.pdf)
- Vizcarra et. al. 2019. "Weight Matters: Factors Influencing Eating Behaviors of Vulnerable Women." *Nutrients* 11(8): 1809. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6723940/>
- Waber et. al. 2011. "Cognitive Impairment as a Mediator in the Developmental Pathway From Infant Malnutrition to Adolescent Depressive Symptoms in Barbadian Youth." *J Dev Behav Pediatr* 32(3): 225-32. <https://www.ncbi.nlm.nih.gov/pubmed/21285893>
- Waber, Deborah P. Cyralene P. Bryce, Jonathan M. Girard, Miriam Zichlin, Garrett M. Fitzmaurice & Janina R. Galler. 2014. "Impaired IQ and Academic Skills in Adults Who Experienced Moderate to Severe Infantile Malnutrition: A 40-year Study." *Nutritional Neuroscience* 17(2) 58-64. <https://www.tandfonline.com/doi/abs/10.1179/1476830513Y.0000000061>
- Walker SP, Chang SM, Powell CA, Simonoff E, Grantham-McGregor SM. 2007. "Early Childhood Stunting is Associated with Poor Psychological Functioning in Late Adolescence and Effects are Reduced by Psychosocial Stimulation." *J Nutr* 137(11): 2464-9.
- Walson, Judd L. and James A. Berkley. The impact of malnutrition on childhood infections. 2018 June; 31(3): 231–236. *Current Opinion in Infectious Diseases*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6037284/>
- WEF. 2017. "The Global Gender Gap Report. World Economic Forum." [http://www3.weforum.org/docs/WEF\\_GGGR\\_2017.pdf](http://www3.weforum.org/docs/WEF_GGGR_2017.pdf)
- WFP. 2019. "Women are Hungrier Infographic." <https://www.wfpusa.org/multimedia/why-women-face-higher-rates-of-hunger/>
- Wells, Jonathan et. al. 2019. "Beyond Wasted and Stunted—A Major Shift to Fight Child Undernutrition." *The Lancet* 3(11): 831. [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(19\)30244-5/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(19)30244-5/fulltext).
- Wengle, Erik, Linda J Blumberg, and John Holahan. 2018. "Are Marketplace Premiums Higher in Rural Than in Urban Areas?" <https://www.rwjf.org/en/library/research/2018/11/are-marketplace-premiums-higher-in-rural-than-in-urban-areas.html>



WFP. 2019. "Women & Hunger: Women are Hungrier." <https://www.wfpusa.org/women-hunger/>

WHO. 2019. "Essential Nutrition Actions: Mainstreaming Nutrition Through the Life-Course." <https://www.who.int/nutrition/publications/essential-nutrition-actions-2019/en/>

WHO. 2008. "Global Anaemia Prevalence and Number of Individuals Affected. Vitamin and Mineral Nutrition Information System (VMNIS)." [https://www.who.int/vmnis/anaemia/prevalence/summary/anaemia\\_data\\_status\\_t2/en/](https://www.who.int/vmnis/anaemia/prevalence/summary/anaemia_data_status_t2/en/).

WHO. 2011. "Exclusive Breastfeeding for Six Months Best for Babies Everywhere." [https://www.who.int/mediacentre/news/statements/2011/breastfeeding\\_20110115/en/](https://www.who.int/mediacentre/news/statements/2011/breastfeeding_20110115/en/)

WHO (a). 2019. "Maternal Mortality: Key Facts." <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>

WHO (b). 2019. "Children: Reducing Mortality. Key Facts." <https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality>

WHO and 1,000 Days. 2014. "Global Nutrition Targets 2025 Stunting Policy Brief." [https://apps.who.int/iris/bitstream/handle/10665/149019/WHO\\_NMH\\_NHD\\_14.3\\_eng.pdf?ua=1](https://apps.who.int/iris/bitstream/handle/10665/149019/WHO_NMH_NHD_14.3_eng.pdf?ua=1)

Wong, K., Benova, L., & Campbell, O. 2017. "A Look Back on How Far to Walk: Systematic Review and Meta-Analysis of Physical Access to Skilled Care for Childbirth in Sub-Saharan Africa." *PLOS ONE* 12(9): e0184432. doi:10.1371/journal.pone.0184432

# Acknowledgments

Emma Feutl Kent, 1,000 Days – Author

Gregory Adams, Consultant – Editor

Allyson Garner, 1,000 Days – Project Manager

Carol Dreibelbis, 1,000 Days – Copy Editor







[WWW.THOUSANDDAYS.ORG](http://WWW.THOUSANDDAYS.ORG)

[@1000DAYS](https://www.instagram.com/1000DAYS)

[FACEBOOK.COM/1000DAYS](https://www.facebook.com/1000DAYS)