Nutrition of Young Children and Women

Ethiopia 2005

This chartbook is based on data from the 2005 Ethiopia Demographic and Health Survey (EDHS) and was produced by Macro International, Inc. The EDHS is part of the worldwide MEASURE DHS project, which is funded by the U.S. Agency for International Development (USAID). Additional information about the EDHS may be obtained from the Central Statistical Agency (CSA), P.O. Box 1143, Addis Ababa, Ethiopia; Telephone: (251) 111 55 30 11/111 15 78 41, Fax: (251) 111 55 03 34. E-mail: csa@ethionet.et. Additional information about the DHS project may be obtained by contacting the MEASURE DHS+ program, Macro International, 11785 Beltsville Drive, Calverton, MD; Telephone: (301) 572-0200, Fax: (301) 572-0999, Internet: http://www.measuredhs.com

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Nutrition of Young Children and Women in Ethiopia

Findings from the 2005 Ethiopia Demographic and Health Survey

Macro International Inc.
Calverton, Maryland, USA

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Table of Contents

Nutritional Status of Children **1**

Malnutrition Among all Children Under Five Years 2

Undernutrition and Survival of Children 3

Infant and Child Mortality, Ethiopia Compared with Select Sub-Saharan African Countries 4

Causes and Contributing Factors of Under-Five Mortality 5

Malnutrition Among Children Under Five Years Based on the NCHS/CDC/WHO International Reference Population and WHO Child Growth Standards 6

Changes in Undernutrition Rates Among Children Under Five Years 7

Stunting, Wasting, and Underweight Among Children Under Five Years in Select Sub-Saharan African Countries 8

Stunting, Wasting, and Underweight Among Children Under Five Years by Age 9

Stunting, Wasting, and Underweight Among Children Under Five Years by Mother's Education 10

Stunting, Wasting, and Underweight Among Children Under Five Years by Source of Drinking Water 11

Stunting, Wasting, and Underweight Among Children 6-59 Months by Their Anemia Status 12

Diarrhea and Cough with Rapid Breathing Compared with Malnutrition Rates 13

Feeding Practices of Infants Under Six Months 14

Infant and Young Child Feeding (IYCF) Practices of Children 6-23 Months 15

Anemia Among Children 6-59 Months 16

Children 6-59 Months Living in Households with Adequately Iodized Salt by Region 17

Vitamin A Supplementation Among Children 6-59 Months in the Past Six Months by Region 18

Nutritional Status of Women **19**

Malnutrition Among Women 15-49 Years 20

Malnutrition Among all Women in Select Sub-Saharan African Countries 21

Night Blindness Among Women 22

Anemia Among Women 23

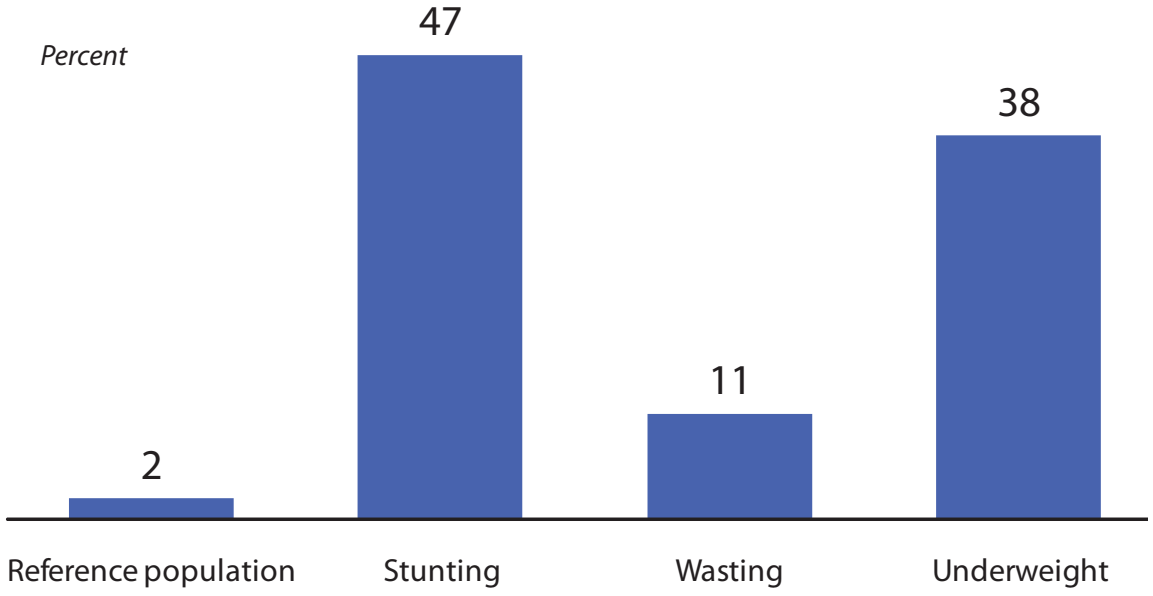
Malnutrition Among Mothers of Children Under Five Years 24

Malnutrition Among all Women and Mothers of Children Under Five Years by Education 25

Malnutrition Among all Women and Mothers of Children Under Five Years by Wealth 26

Nutritional Status of Children

Malnutrition Among all Children Under Five Years



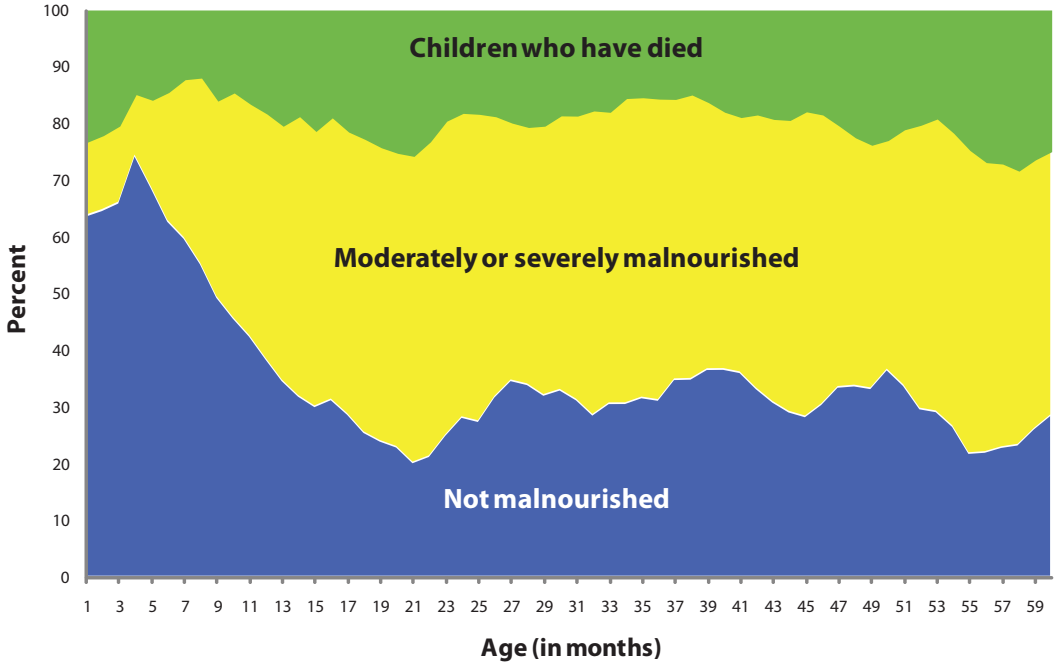
- Forty-seven percent of Ethiopian children under five years are chronically malnourished. In other words, they are too short for their age or stunted[1]. The proportion of children who are stunted is more than 23 times the level expected in a healthy, well-nourished population. Stunting is a good long-term indicator of the nutritional status of a population because it is not markedly affected by short-term factors, such as season of data collection, epidemic illnesses, acute food shortages, or recent shifts in social or economic policies.

- Acute malnutrition, manifested by wasting[2], results in a child being too thin for his or her height. Eleven percent of Ethiopian children under five years are wasted, which is more than 5 times the level expected in a healthy population. Wasting is not typically used as a long-term indicator of the population's health status because wasting can be dramatically affected by short-term factors, such as seasonality of food availability, shifts in social or economic policies, and epidemic illnesses.

- Thirty-eight percent of children under five years are underweight[3] for their age. This is 19 times the level expected in a healthy, well-nourished population. Underweight status is indicative of children who suffer from chronic or acute malnutrition or both, and may be influenced by both short- and long-term determinants of malnutrition. Underweight is often used as a general indicator of a population's health status.

1 A stunted child has a height-for-age Z-score that is -2 standard deviations (SD) below the NCHS/CDC/WHO International Reference Population. Chronic malnutrition is the result of an inadequate intake of food over a long period and may be exacerbated by chronic illness.
2 A wasted child has a weight-for-height Z-score that is -2 SD below the NCHS/CDC/WHO International Reference Population. Acute malnutrition is the result of a recent failure to receive adequate nutrition and may be affected by acute illness, especially diarrhea.
3 An underweight child has a weight-for-age Z-score that is -2 SD below the NCHS/CDC/WHO International Reference Population. This condition can result from either chronic or acute malnutrition, or a combination of both.

Undernutrition and Survival of Children

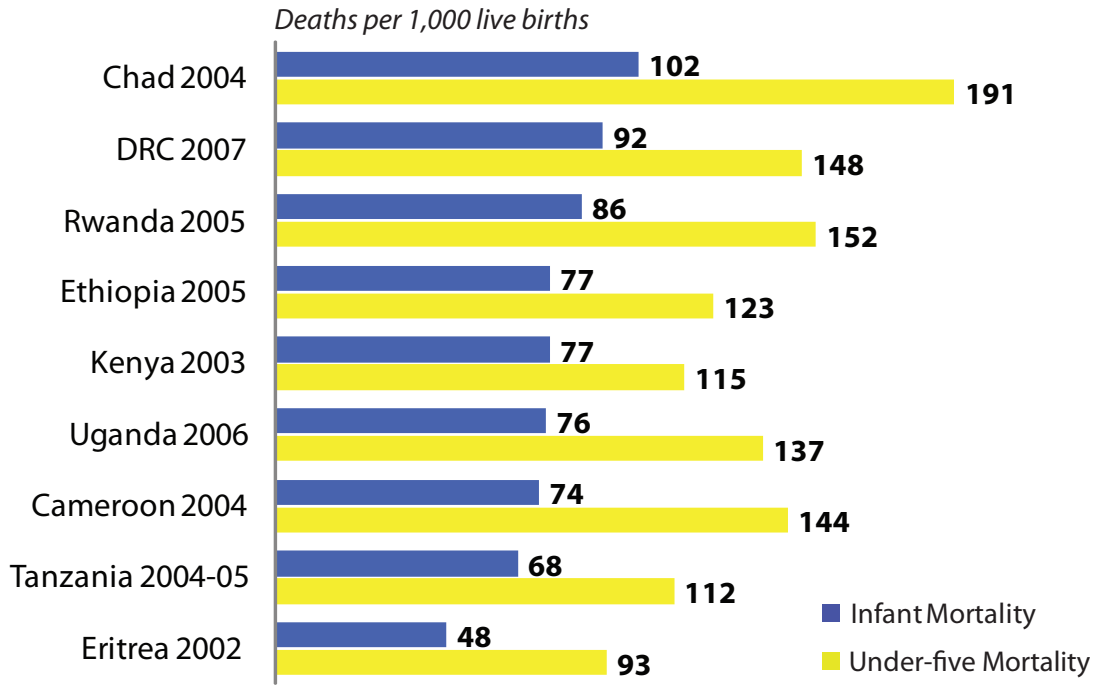


Malnutrition and mortality both take a tremendous toll on young children. This figure illustrates the proportion of children in Ethiopia who have died or are undernourished by age (in months).

- Between 5-21 months of age, the percentage of children who are alive and not malnourished drops rapidly from 74 percent to 21 percent. Thereafter, the rate rises to 36 percent at 41 months and remains between 20 and 35 percent through 59 months.
- Between birth and 21 months of age, the percentage of children who are moderately or severely malnourished[1] increases dramatically from 13 percent to 56 percent. This percentage then fluctuates between 40 and 54 percent until 59 months.
- From birth to 7 months, the percentage of children who have died decreases gradually, from 23 percent to 12 percent. The rate goes up to 26 percent at 21 months and then gradually declines to 15 percent at 36 months and rises again to 25 percent by 59 months.

1 A child with a Z-score minus three standard deviations (-3 SD) below the reference standard is considered severely malnourished, while one with a Z-score between -2 SD and -3 SD is considered moderately malnourished.

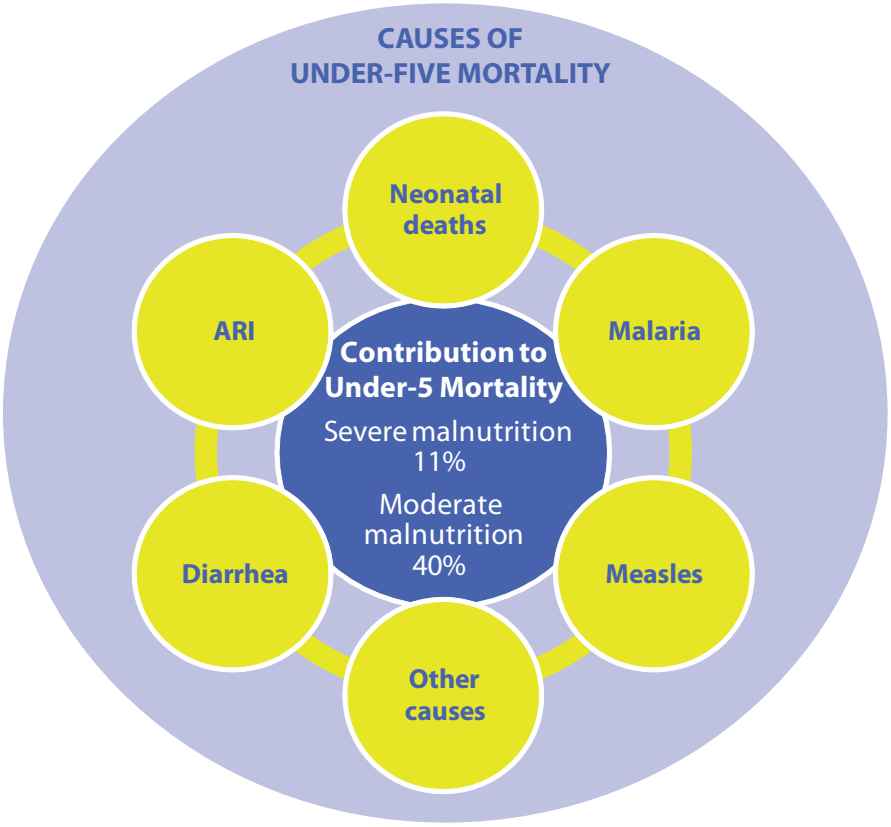
Infant and Child Mortality, Ethiopia Compared with Select Sub-Saharan African Countries



Malnutrition compromises child health, making children susceptible to illness and death. Infectious diseases, such as acute respiratory infections, diarrhea, and malaria, account for the greatest proportion of infant and under-five mortality. The infant mortality rate is a commonly used measure of infant health and is an indicator of the socioeconomic conditions of a country.

- Ethiopia's infant mortality rate (77 deaths per 1,000 births) indicates that 7 percent of children born in Ethiopia will die before their first birthday. This rate is one of the highest among the Sub-Saharan African countries shown in the figure above.
- Ethiopia's under-five mortality rate (123 deaths per 1,000 births) indicates that roughly 12 percent of children born in Ethiopia will die before their fifth birthday. This rate is one of the highest among the Sub-Saharan African countries shown.

Causes and Contributing Factors of Under-Five Mortality



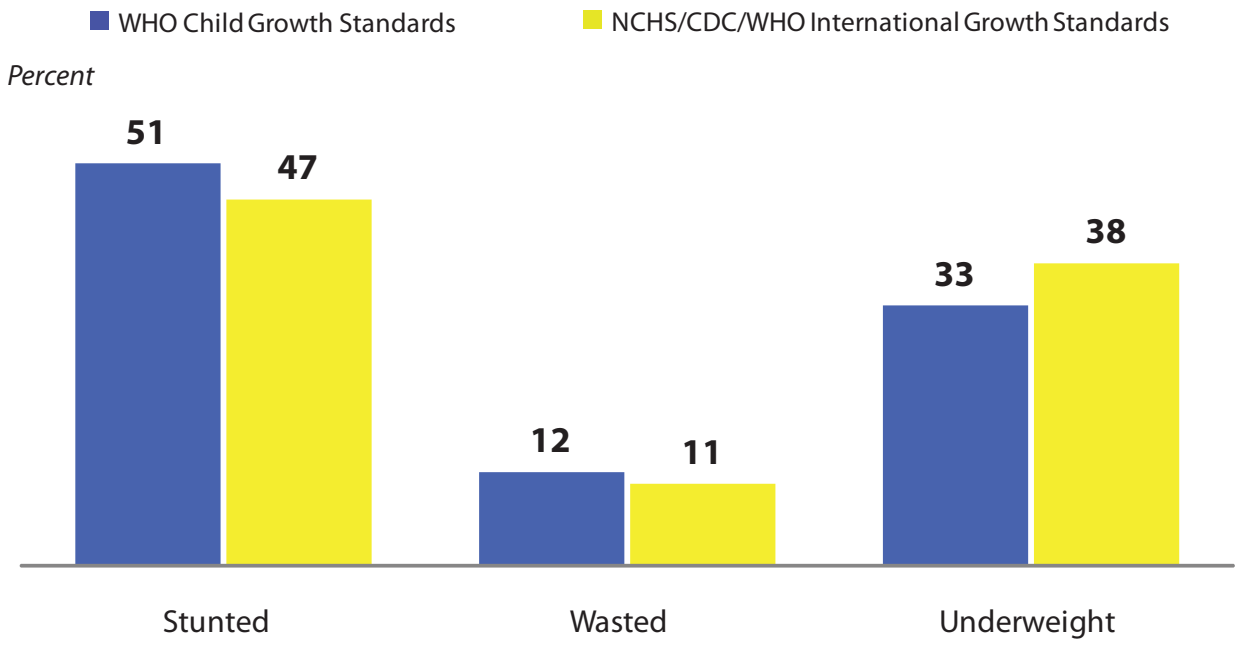
Under-five mortality is largely a result of infectious diseases and neonatal deaths in developing countries. Undernutrition is an important contributory factor to the death of many young children. Even if a child is only mildly malnourished, the mortality risk associated with respiratory infections, diarrhea, malaria, measles, and other infectious diseases is increased.

Formulas developed by Pelletier et al.[1] are used to quantify the contributions of moderate and severe malnutrition to under-five mortality.

- Fifty-one percent of all deaths that occur before age five in Ethiopia are related to malnutrition (severe and moderate malnutrition).
- Because of its extensive prevalence, moderate malnutrition (40 percent) contributes to more deaths than severe malnutrition (11 percent).

1 Pelletier, D.L., E.A. Frongillo, Jr., D.G. Schroeder, and J.P. Habicht. 1994. A methodology for estimating the contribution of malnutrition to child mortality in developing countries. Journal of Nutrition 124 (10 Suppl.): 2106S-2122S

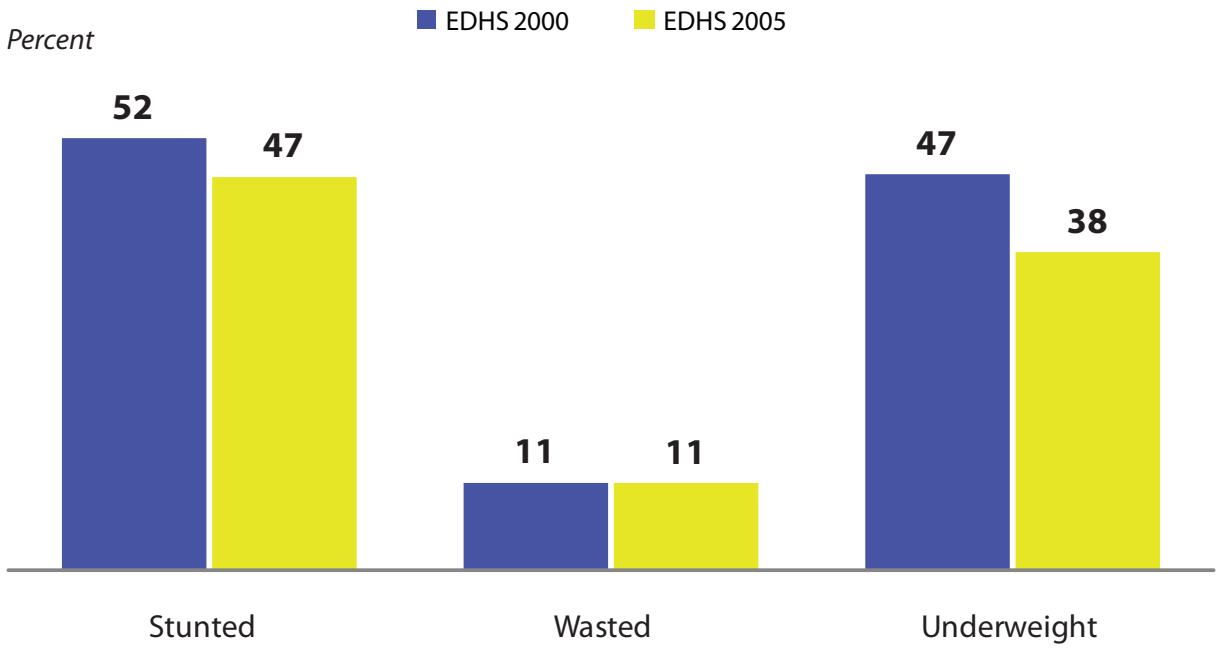
Malnutrition Among Children Under Five Years Based on the NCHS/CDC/WHO International Reference Population and WHO Child Growth Standards



In 1997, WHO conducted an intensive study in five countries around the globe, and new international standards for infants and children were developed for assessing physical growth, nutritional status, and motor development from birth to five years. The graph presents a comparison of the nutritional status of Ethiopian children estimated from the earlier measure based on the NCHS/CDC/WHO International Reference Population and the new WHO Child Growth Standards.

- More children fall under the -2SD category of height-for-age (stunting) by the WHO Child Growth Standards (51 percent) compared to the NCHS/CDC/WHO International Reference Population (47 percent).
- Differences in wasting are small when calculated using either standard.
- The proportion of children underweight is 5 percentage points higher when using the NCHS/CDC/WHO International Reference Population.

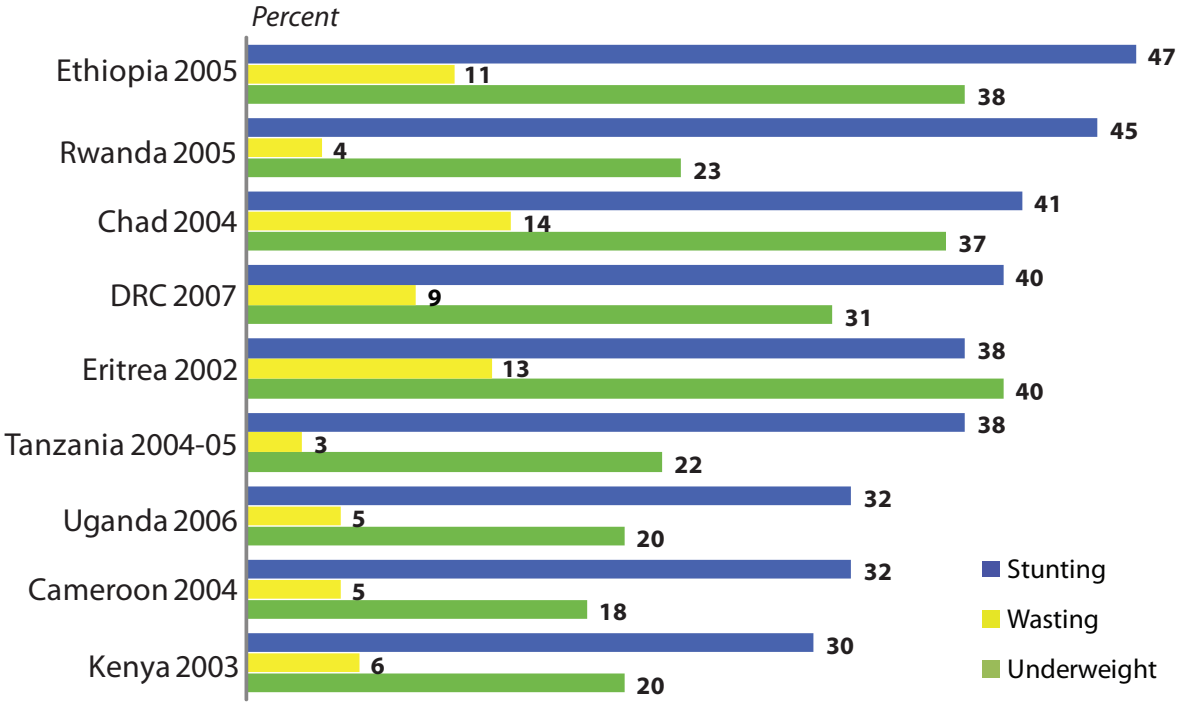
Changes in Undernutrition Rates Among Children Under Five Years



The findings of the 2005 EDHS suggest that the nutritional status of children in Ethiopia based on the NCHS/CDC/WHO International Reference Population has changed over the past five years.

- Compared to data collected in the EDHS 2000, the percent of stunted children declined by 10 percent (5 percentage points). This decrease in stunting between 2000 and 2005 is statistically significant.
- Compared to 2000, there was no change in the percent of children with acute malnutrition (wasting).
- Children underweight has declined from 47 percent in 2000 to 38 percent in 2005 . This decline in the percentage of children underweight is statistically significant.

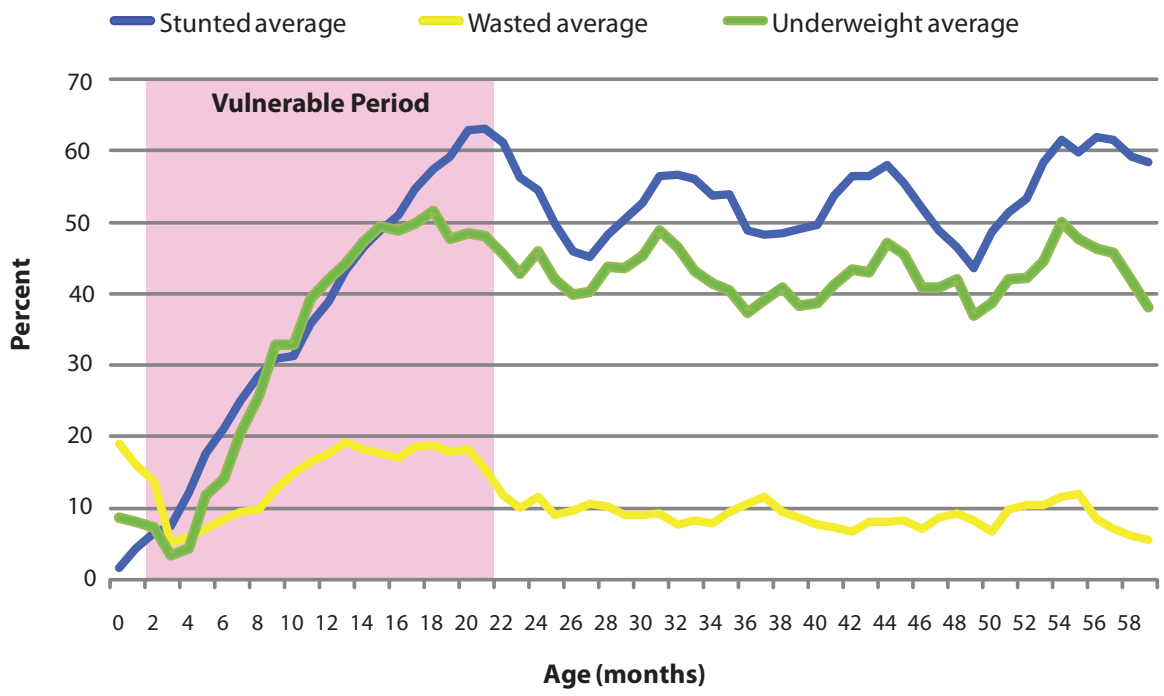
Stunting, Wasting, and Underweight Among Children Under Five Years in Select Sub-Saharan African Countries



Among Sub-Saharan countries selected,

- The percentage of children under five years who are stunted ranges from 30 percent to 47 percent. Ethiopia has the highest percentage of children stunted.
- The percentage of children under five years who are wasted ranges from 3 percent to 14 percent. Ethiopia has one of the highest percentages of children wasted.
- The percentage of children under five years who are underweight ranges from 18 percent to 40 percent. Ethiopia has one of the highest levels of children under five years who are underweight.

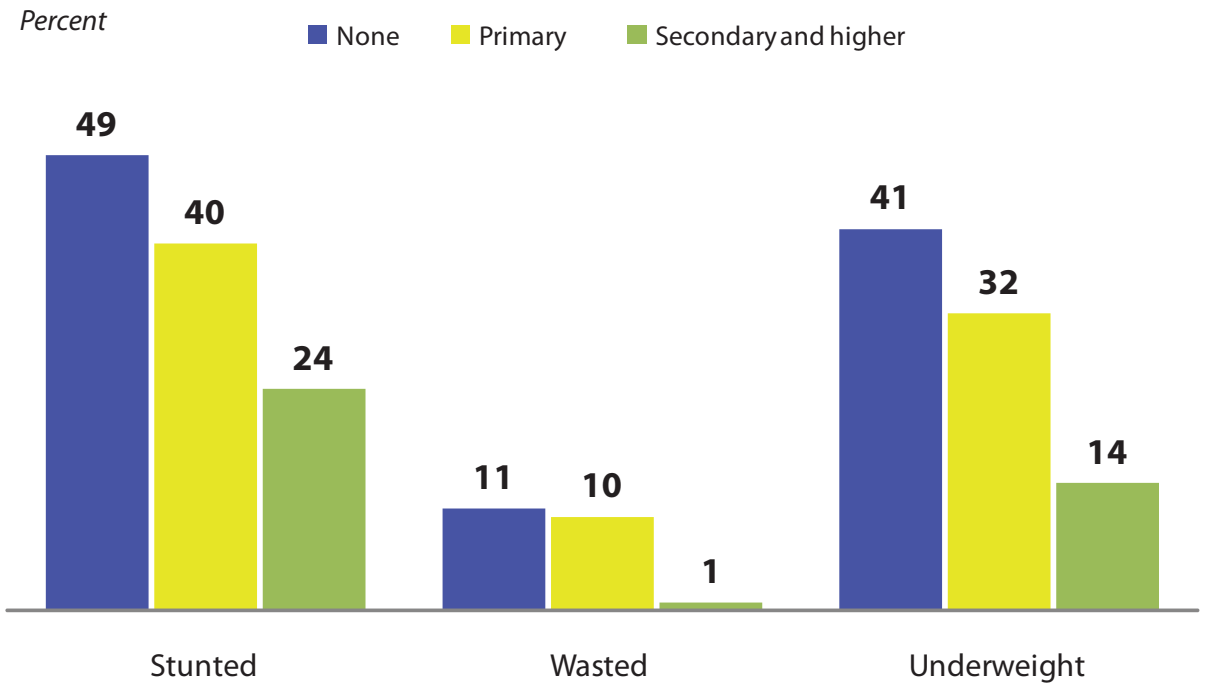
Stunting, Wasting, and Underweight Among Children Under Five Years by Age



Children's growth and development are particularly vulnerable between 2 and 21 months of age.

- The proportion of children stunted rises sharply from 2 to 21 months of age, peaking at 63 percent. The proportion of children who are stunted then drops to 45 percent at 27 months and then fluctuates between 48 and 62 percent until age 59 months.
- The proportion of children wasted rises from 3 to 20 months of age, when it peaks at 18 percent. The proportion then declines to a low of 7 percent by 33 months and fluctuates between 6 and 12 percent until 59 months.
- The proportion of children underweight rises sharply to 52 percent at 18 months. The proportion declines to 40 percent by 27 months and rises to 49 percent at 31 months and fluctuates between 37 and 50 percent until 59 months.

Stunting, Wasting, and Underweight Among Children Under Five Years by Mother's Education

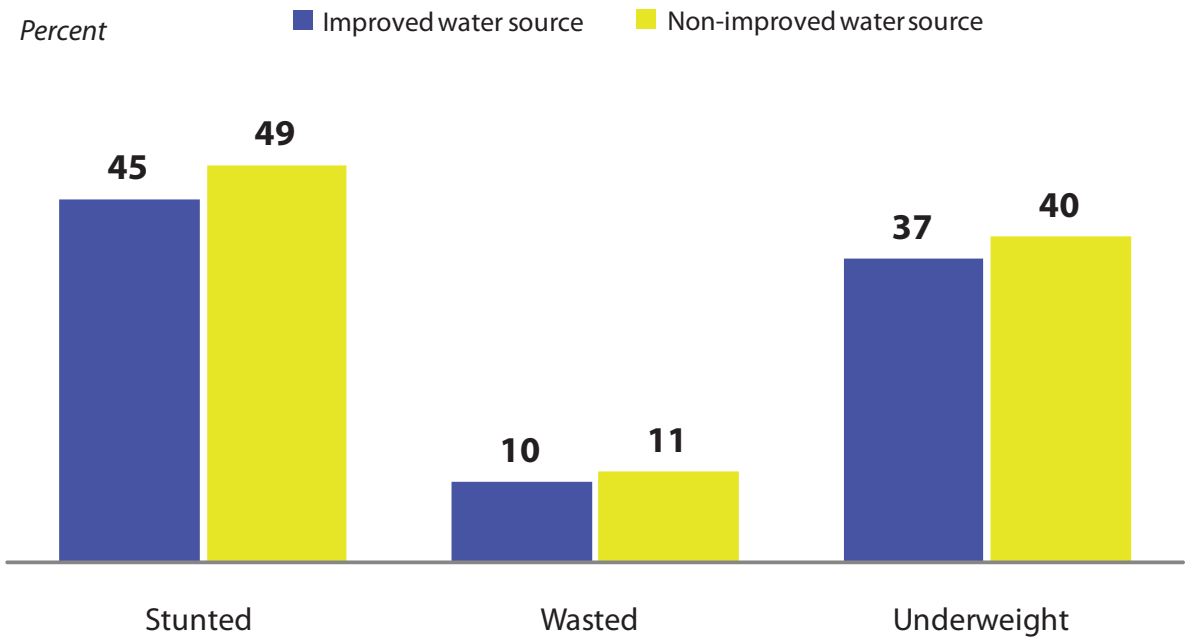


Good child care practices are influenced by maternal education and household wealth.

In Ethiopia, 79 percent of mothers of children under five years of age have never attended school, while 17 percent have some primary education and 4 percent have a secondary or higher education.

- Maternal education has an inverse relationship with stunting and wasting in Ethiopia. As the level of maternal education increases, the level of stunting, wasting, and underweight decreases.
- Stunting is twice as high, wasting is more than five times as high, and underweight is three times as high among children of mothers with no education as among children of mothers with secondary and higher level of education.

Stunting, Wasting, and Underweight Among Children Under Five Years by Source of Drinking Water

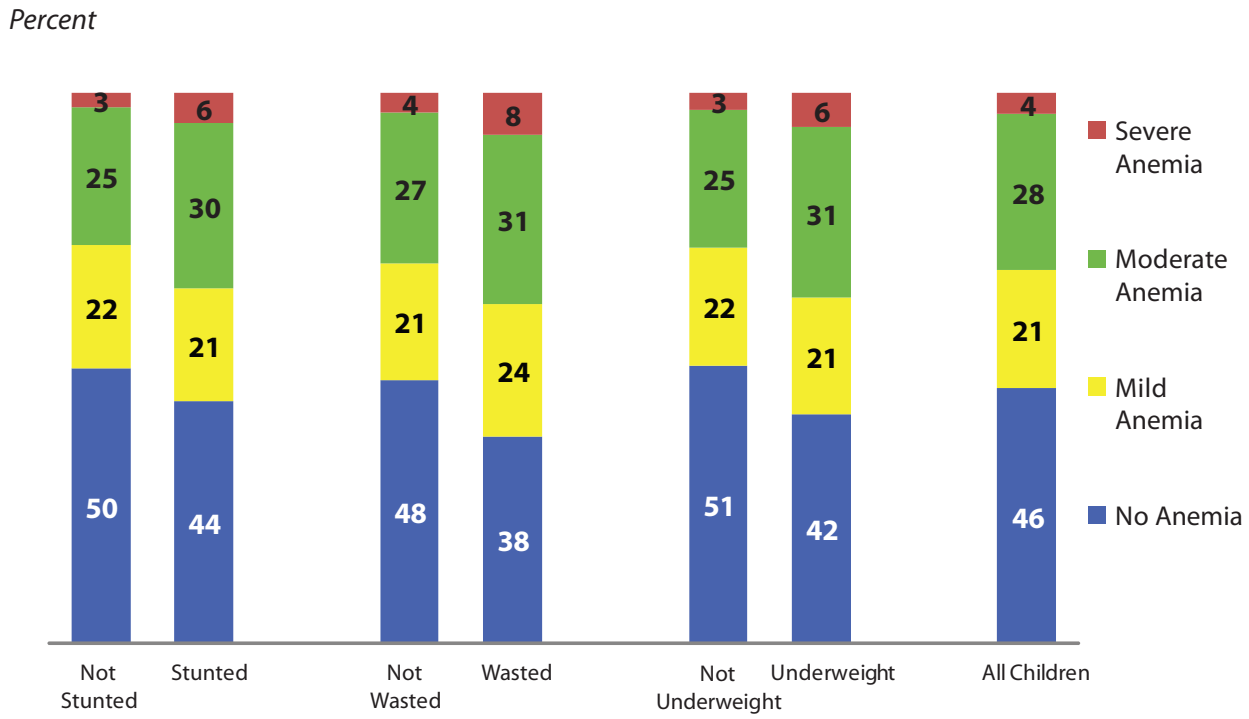


Improved water source: piped into dwelling, piped into compound, piped outside compound, tube well or borehole, protected dug well, protected spring, rainwater
Nonimproved water source: unprotected dug well, unprotected spring, tanker truck, surface water

A household's source of drinking water is linked to its socioeconomic status. Poor households are more likely to obtain drinking water from contaminated sources such as surface water or unprotected wells. Without an adequate supply of good-quality water, the risks of food contamination, diarrheal disease, and malnutrition rise. Infants and children from households that do not have access to an improved water source are at a greater risk of being malnourished than those from households with an improved water source. Among the households with children under five years, 57 percent have access to an improved water source, while 43 percent use water from non-improved sources.

- Children whose drinking water is from a non-improved water source are more likely to be stunted than children with access to an improved water source.
- Levels of wasting and underweight do not vary significantly by water source.

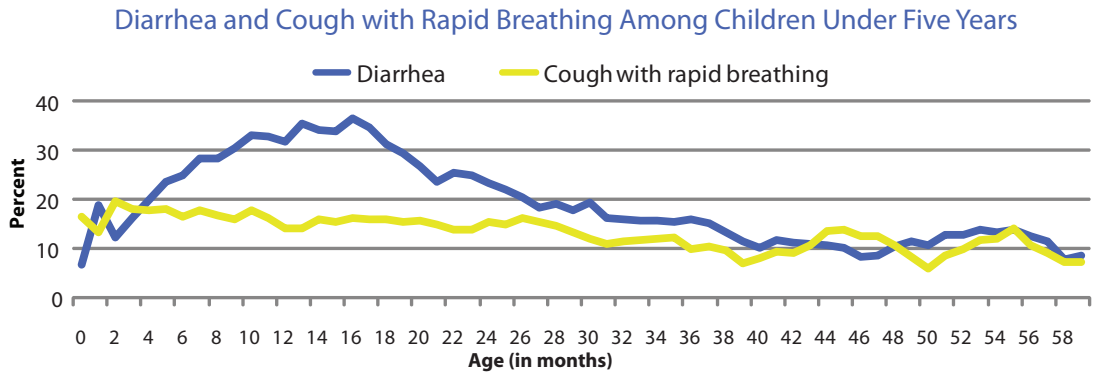
Stunting, Wasting, and Underweight Among Children 6-59 Months by Their Anemia Status

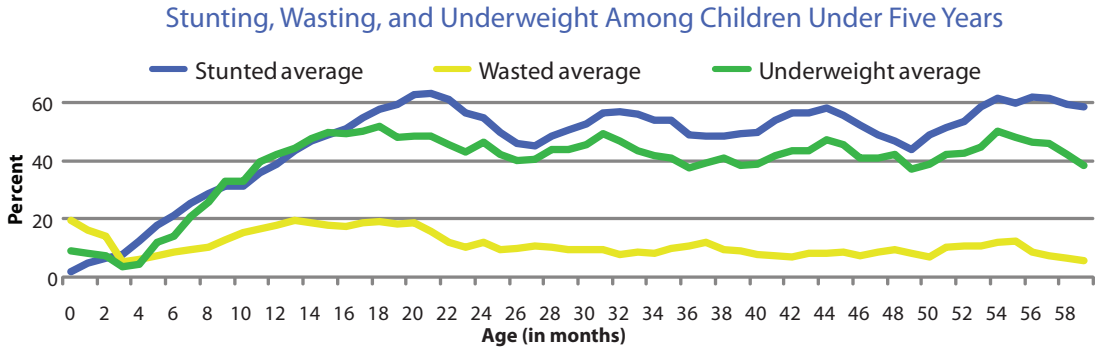


Micronutrient deficiency among young Ethiopian children is an important contributing factor in childhood morbidity and mortality. Micronutrient deficiency, particularly an inadequate intake of iron, has a direct impact on nutritional status and is the most common cause of anemia.

- Ethiopian children who are stunted, wasted, or underweight are two times more likely to be severely anemic as children who are not nutritionally deficient.
- Children who are stunted, wasted, or underweight are also proportionately more likely to be mildly or moderately anemic than normal children.

Diarrhea and Cough with Rapid Breathing Compared with Malnutrition Rates





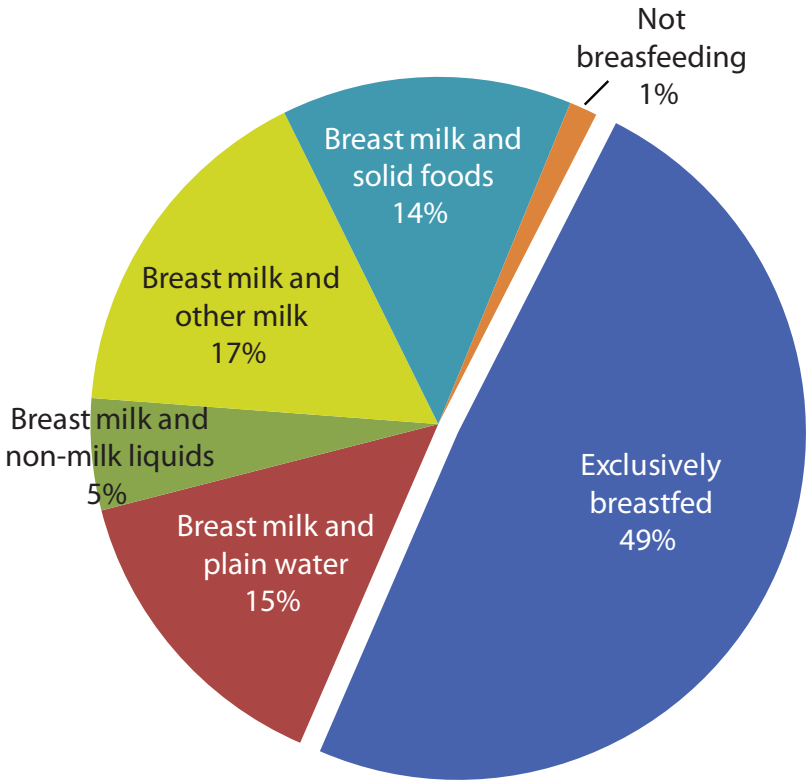
Acute respiratory infection (ARI) and dehydration due to diarrhea are major causes of morbidity and mortality in most sub-Saharan countries. To estimate the prevalence of ARI, mothers were asked whether their children under five years had been ill with a cough accompanied by short, rapid breathing in the past two weeks. Additionally, mothers were asked whether their children under five years had diarrhea in the past two weeks. Early diagnosis and rapid treatment can reduce the risk of severe illness or death caused by these conditions.

- Thirteen percent of Ethiopian children under five years of age had symptoms of ARI in the two weeks preceding the survey. Symptoms of ARI rise to 19 percent at age two months. After that, ARI slowly decreases and remains relatively constant from 12 to 59 months with a dip to 5 percent at 50 months.

- Eighteen percent of children under five years of age had diarrhea in the two weeks preceding the survey. The prevalence of diarrhea increases rapidly from 3 to 16 months then decreases to around 25 percent from 20 to 26 months. After that, diarrhea prevalence gradually decreases to 11 percent by 59 months.

- There is a strong relationship between the prevalence of diarrhea and being stunted or underweight. All three malnutrition rates rise concurrently from age 2 months to 16-18 months. Thereafter, the prevalence of diarrhea declines, but the proportion stunted and underweight does not.

Feeding Practices of Infants Under Six Months

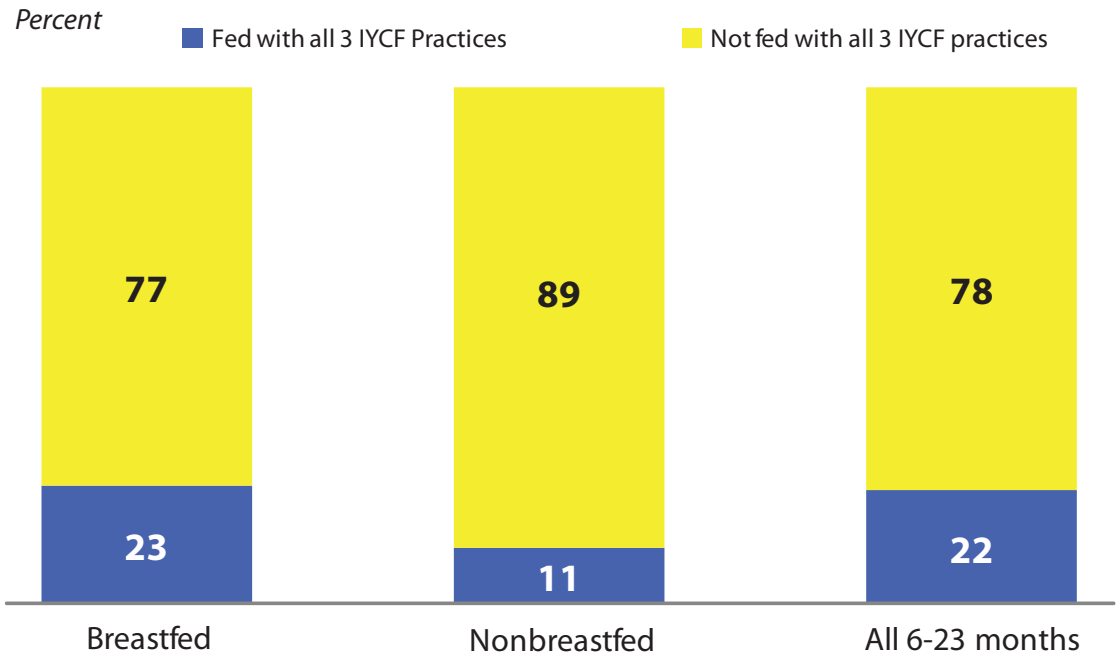


Improper feeding practices, in addition to diarrheal disease, are important determinants of malnutrition. WHO and UNICEF recommend that all infants be exclusively breastfed—fed only breast milk with no other liquids (including water) or food—from birth until six months of age.

In Ethiopia, the introduction of liquids, such as water, sugar water, and juice, formula, and solid foods takes place earlier than the recommended age of six months. This practice has a deleterious effect on nutritional status for a number of reasons. First, the liquids and solid foods offered are nutritionally inferior to breast milk. Second, the consumption of liquids and solid foods decreases the infant's intake of breast milk, which in turn reduces the mother's supply of milk. (Breast milk production is determined, in part, by the frequency and intensity of suckling.) Third, feeding young infants liquids and solid foods increases their exposure to pathogens, thus putting them at greater risk of diarrheal disease.

- In Ethiopia, about half of children under the age of six months are exclusively breastfed, as is recommended by WHO and UNICEF.
- Fifteen percent of infants under six months of age are given a combination of breast milk and water. Additionally, 17 percent of infants under six months are given breast milk and other milk, 5 percent are given liquids other than water or milk, and 14 percent receive solid food in addition to breast milk and/or water.
- One percent of infants under six months of age are not being breastfed.

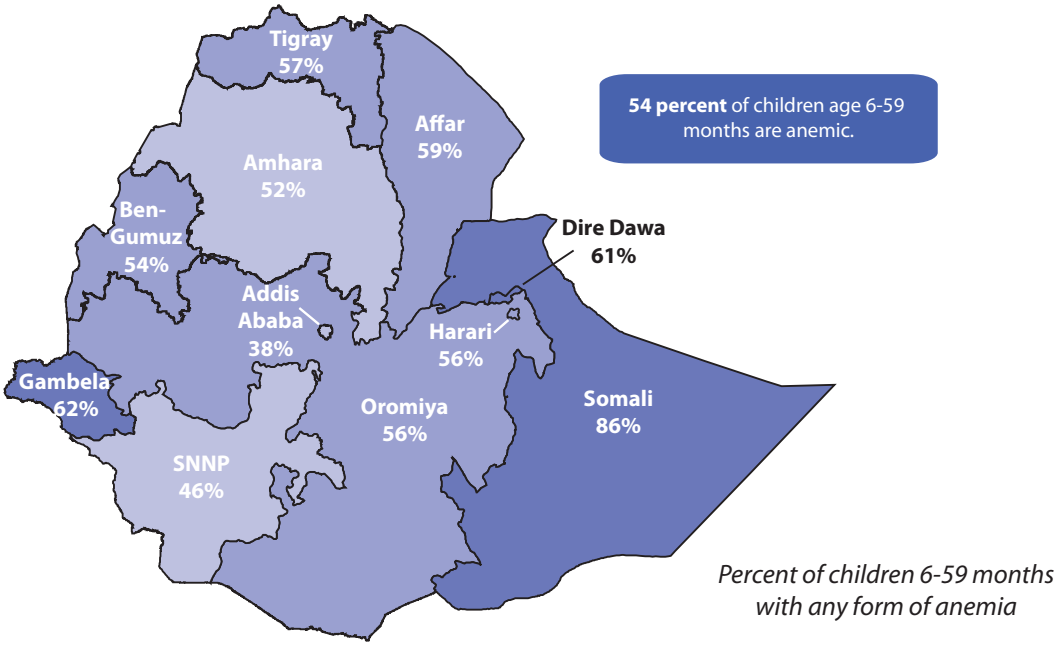
Infant and Young Child Feeding (IYCF) Practices of Children 6-23 Months



Based on the WHO guiding principles for feeding breastfed and non-breasted children, complementary feeding of children age 6-23 months is reflected by the Infant and Young Child Feeding (IYCF) practices indicator. The three IYCF practices are: continued breastfeeding or feeding with appropriate calcium-rich foods if not breastfed; feeding solid or semi-solid food for a minimum number of times per day according to age and breastfeeding status; and including foods from a minimum number of food groups per day according to breastfeeding status.

- Twenty-three percent of breastfed children age 6-23 were fed with all three IYCF recommended practices.
- Eleven percent of nonbreastfed children age 6-23 were fed with all three IYCF recommended practices.
- Overall, 22 percent of children are fed according to the IYCF recommended practices.

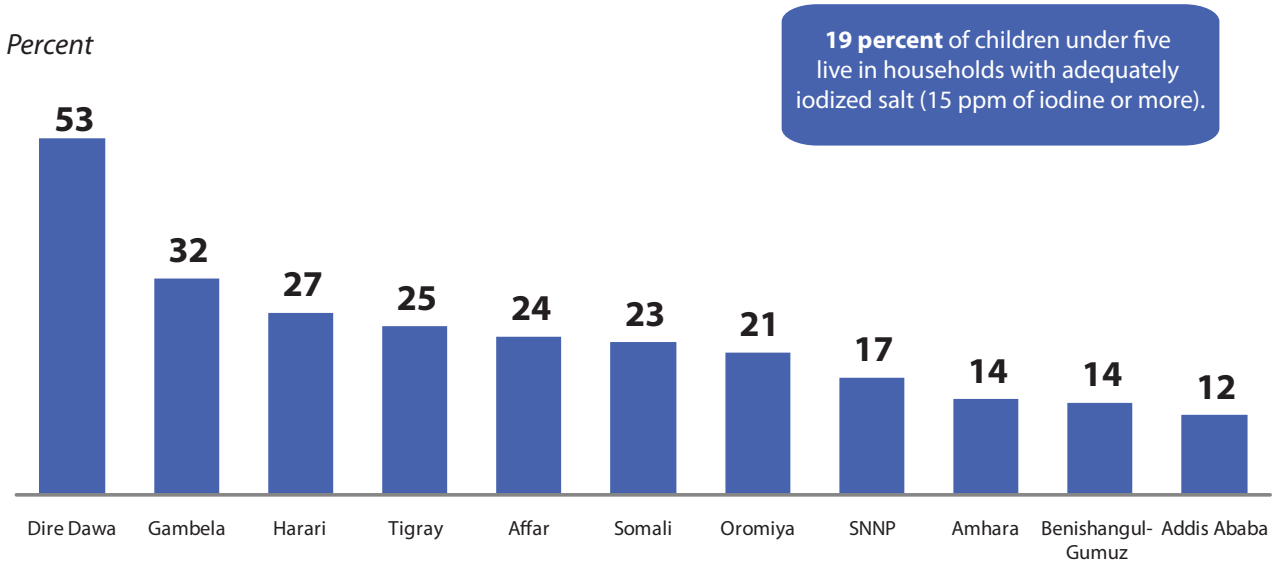
Anemia Among Children 6-59 Months



Anemia is the lack of an adequate amount of hemoglobin in the blood. It can be caused by several different health conditions; iron and folate deficiencies are some of the more important causes of anemia. Vitamin B12 deficiency, protein deficiency, sickle cell disease, malaria, and parasite infection also cause anemia.

- Fifty-four percent of Ethiopian children age 6-59 months are anemic. Twenty-one percent are mildly anemic, 28 percent are moderately anemic, and 4 percent are severely anemic.
- Anemia rates for children are highest in the Somali and Gambela regions (86 and 62 percent, respectively) and lowest in Addis Ababa (38 percent).

Children 6-59 Months Living in Households with Adequately Iodized Salt by Region

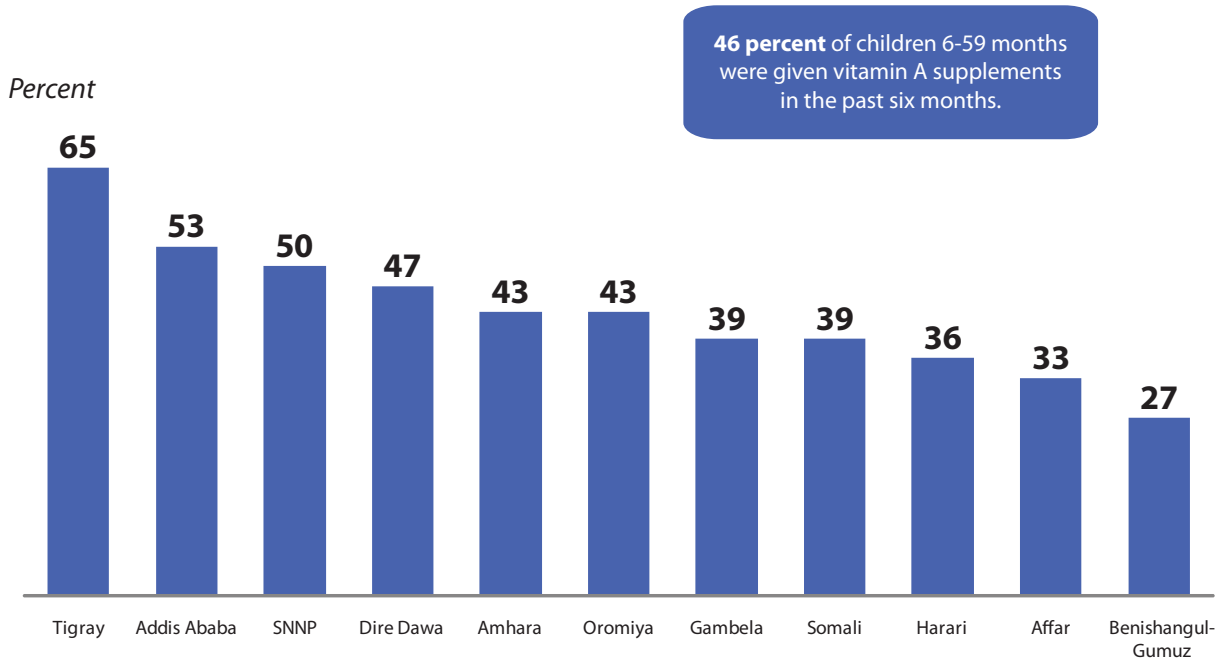


Iodine deficiency is known to cause goiter, cretinism (a severe form of neurological defect), spontaneous abortion, premature birth, infertility, stillbirth, and increased child mortality. One of the most serious consequences to child development is mental retardation caused by iodine deficiency disorder (IDD). IDD is the single most common cause of preventable mental retardation and brain damage in the world. It decreases the production of hormones vital to growth and development. Children with IDD can grow up stunted, apathetic, mentally retarded, and incapable of normal movement, speech, or hearing. IDD in pregnant women may cause miscarriage, stillbirth, and mental retardation in infants.

The fortification of salt with iodine is the most common recommendation to prevent IDD. Iodized salt that is commercially packaged in plastic sacks and not stored properly can lose its concentration of iodine. Proper packaging and storage of iodized salt is essential to ensure that the population benefits from iodine fortification.

- In Ethiopia, 19 percent of children under five years live in households that use salt containing an adequate level of iodine, that is 15 ppm or more.
- Use of iodized salt is lowest in Addis Ababa (12 percent) and highest in Dire Dawa (53 percent).

Vitamin A Supplementation Among Children 6-59 Months in the Past Six Months by Region

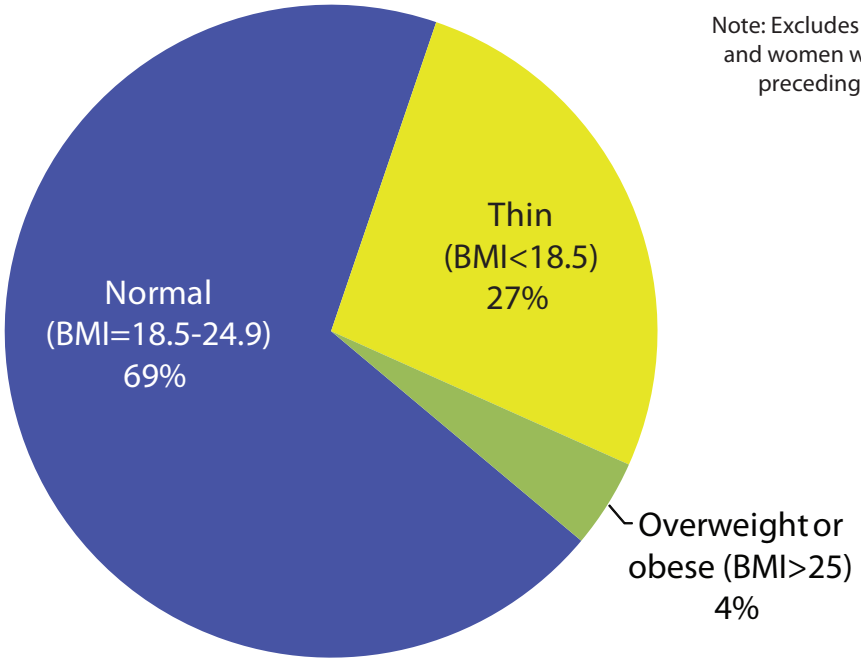


Vitamin A deficiency (VAD) is common in dry environments where fresh fruits and vegetables are not readily available and in cultures where women and young children rarely consume animal products. Vitamin A is found in breast milk, other milks, liver, eggs, fish, butter, red palm oil, mangos, papayas, carrots, pumpkin, and dark leafy greens. Unlike iron or folate, vitamin A is a fat-soluble vitamin, which means that consumption of oils or fats are necessary for its absorption into the body. The liver can store an adequate amount of the vitamin for four to six months. Periodic dosing (every four to six months) with vitamin A supplements is a rapid, low-cost method of ensuring children at risk do not develop VAD. National Immunization Days for polio or measles vaccinations are also used to distribute vitamin A supplements to large numbers of children.

- In Ethiopia, 46 percent of children 6-59 months received a vitamin A dose in the past six months.
- Vitamin A supplementation is lowest in Benishangul-Gumuz (27 percent) and highest in Tigray (65 percent).

Nutritional Status of Women

Malnutrition Among Women 15-49 Years



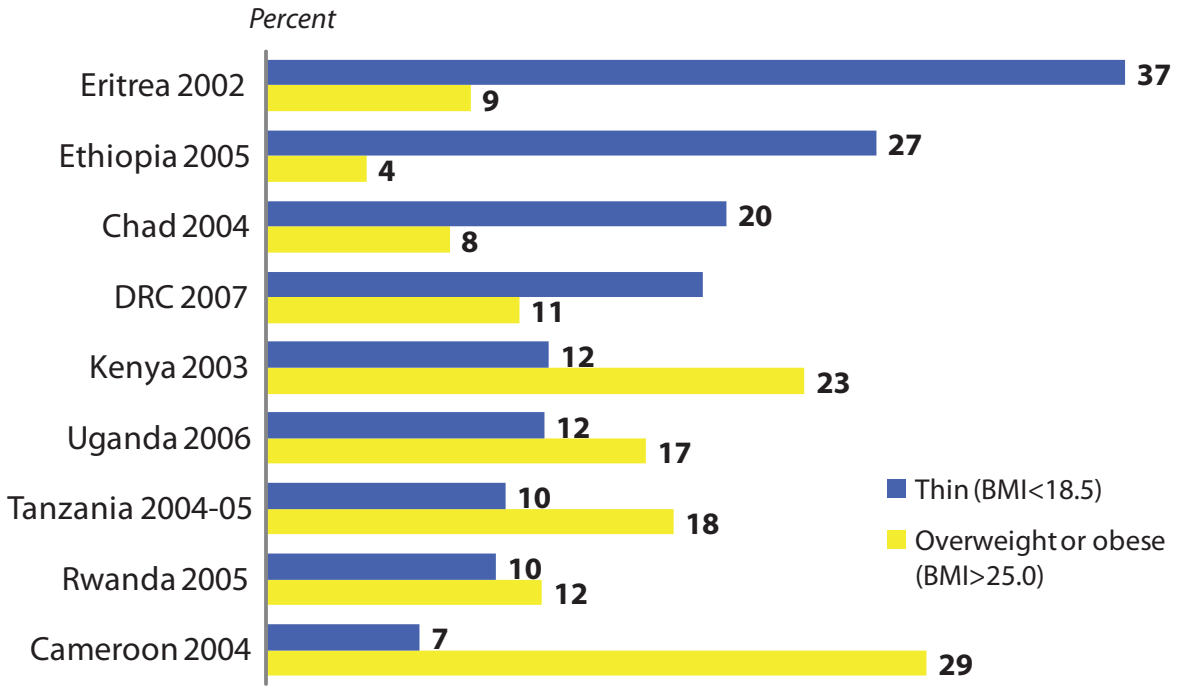
Note: Excludes pregnant women and women with a birth in the preceding two months.

A woman's nutritional status affects her ability to successfully carry, deliver, and care for her children.

Malnutrition in women can be assessed using the body mass index (BMI), which is defined as a woman's weight in kilograms divided by the square of her height in meters (BMI=kg/m^2). A BMI below the suggested cutoff point of 18.5 among non-pregnant, non-lactating women indicates chronic energy deficiency or undernutrition. When BMI is above 25, women are considered overweight or obese.

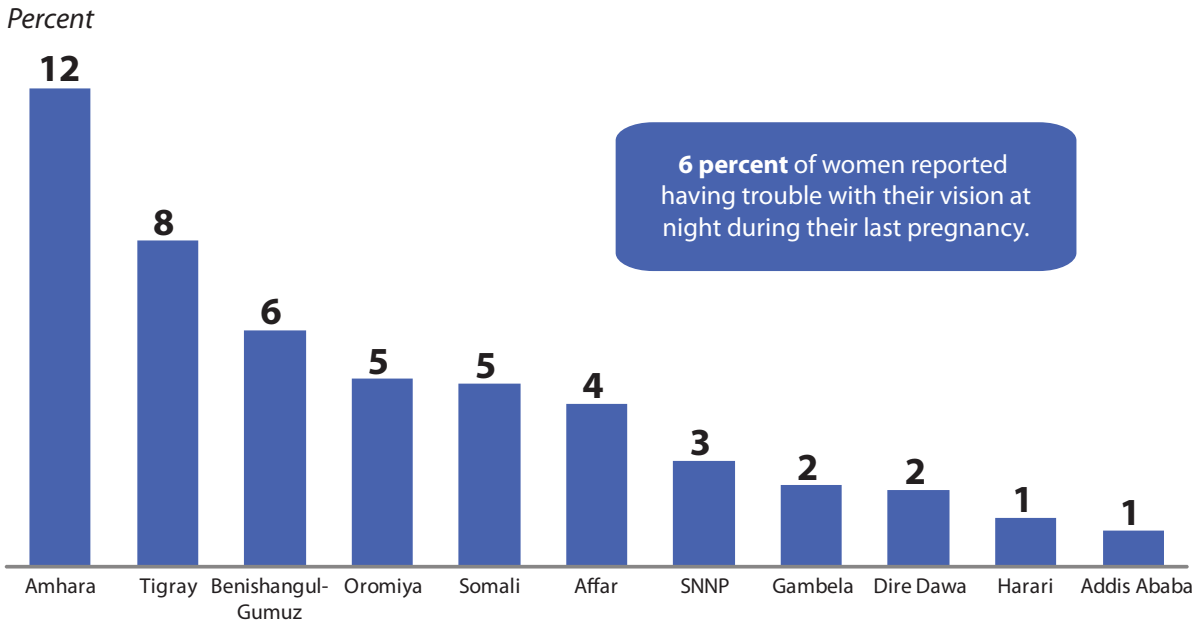
- Twenty-seven percent of women in Ethiopia are undernourished with a BMI less than 18.5.
- Four percent of women are overweight or obese with a BMI greater than 25.0.
- Underweight appears to be a more serious concern than overweight or obesity among women in Ethiopia.

Malnutrition Among all Women in Select Sub-Saharan African Countries



- The proportions of women who are malnourished in select sub-Saharan African countries for which a DHS was recently conducted range from 7 to 37 percent. Ethiopia has one of the highest proportions of malnourished women.
- The percentages of women who are overweight or obese ranges from a low of 4 percent in Ethiopia to a high of 29 percent in Cameroon.

Night Blindness Among Women

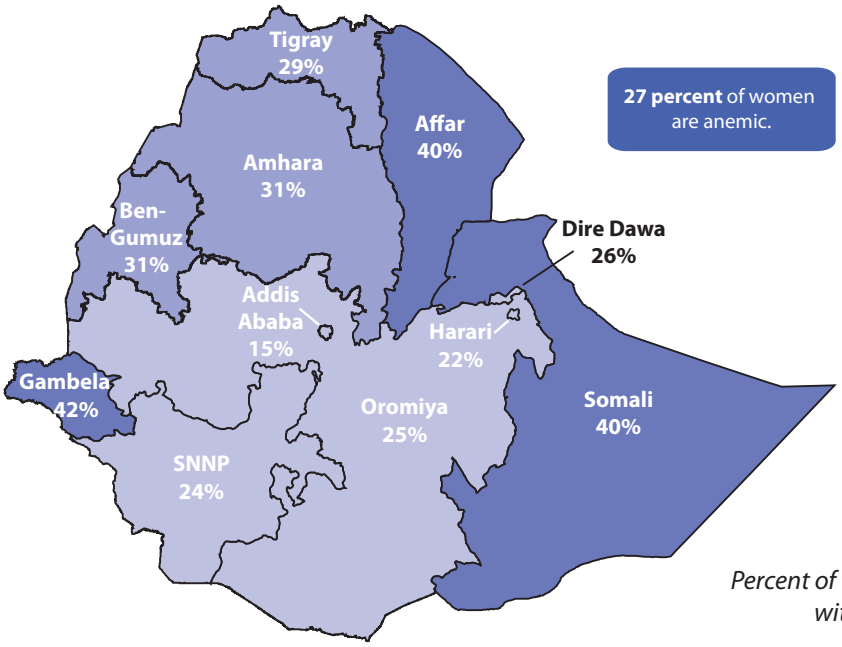


Globally, vitamin A deficiency (VAD) is the leading cause of childhood blindness. The damage to vision (xerophthalmia) is only one of the harmful outcomes of VAD. Vitamin A is crucial for rapid growth and recovery from illness or infection. Children who are vitamin A deficient have reduced immunity and are less likely to recuperate from common childhood illnesses, such as diarrhea, ARI, and measles, and are twice as likely to die as children who are not vitamin A deficient.

A mother's vitamin A status during pregnancy can be an indicator of the vitamin A status of her child. One sign of VAD in women during pregnancy is night blindness.

- 6 percent of women reported having trouble with their vision during the night but not during the day during their last pregnancy. Although this figure corrects for women with vision problems, in general, it may slightly underestimate the rate of night blindness.
- Night blindness is relatively higher in Amhara (12 percent) and Tigray (8 percent) than in other areas.
- 22 percent of all women who had given birth in the past five years reported having some form of night blindness during their last pregnancy.

Anemia Among Women

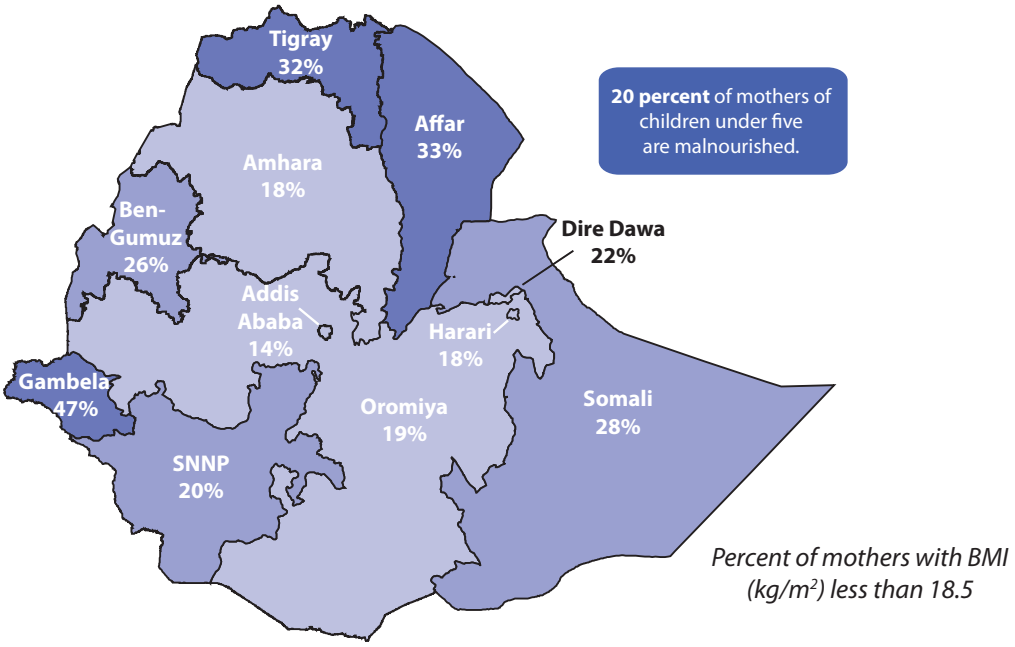


27 percent of women are anemic.

Percent of women age 15-49 with anemia

- Overall, 27 percent of all women suffer from some form of anemia. Seventeen percent have mild anemia, 8 percent have moderate anemia, and 1 percent have severe anemia.
- Prevalence of anemia is highest among women in Gambela (42 percent), Affar (42 percent), and Somali (40 percent).
- Prevalence of anemia is lowest in Addis Ababa (15 percent).

Malnutrition Among Mothers of Children Under Five Years



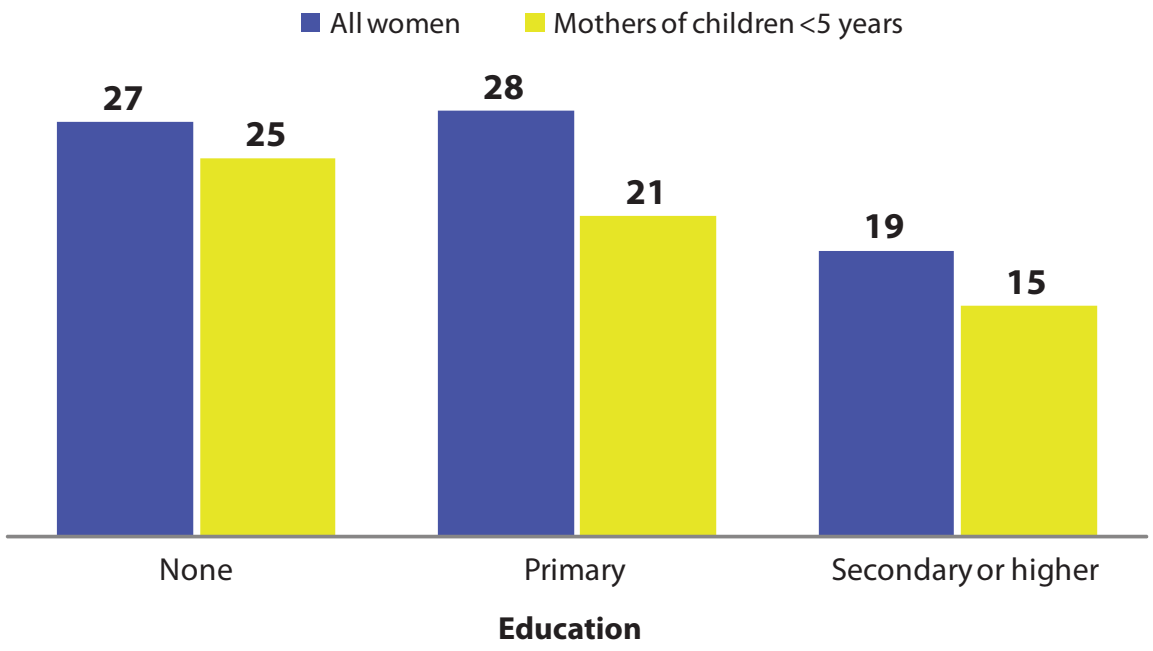
Note: Excludes pregnant women and women with births in the past two months.

A mother's nutritional status affects her ability to successfully carry, deliver, and care for her children.

- Overall, 20 percent of mothers of children under five years have a BMI less than 18.5.
- The highest rates of malnutrition among mothers of children under five years is in Gambela (47 percent).
- The lowest proportion of malnutrition among mothers of children under five years is in Addis Ababa (14 percent).

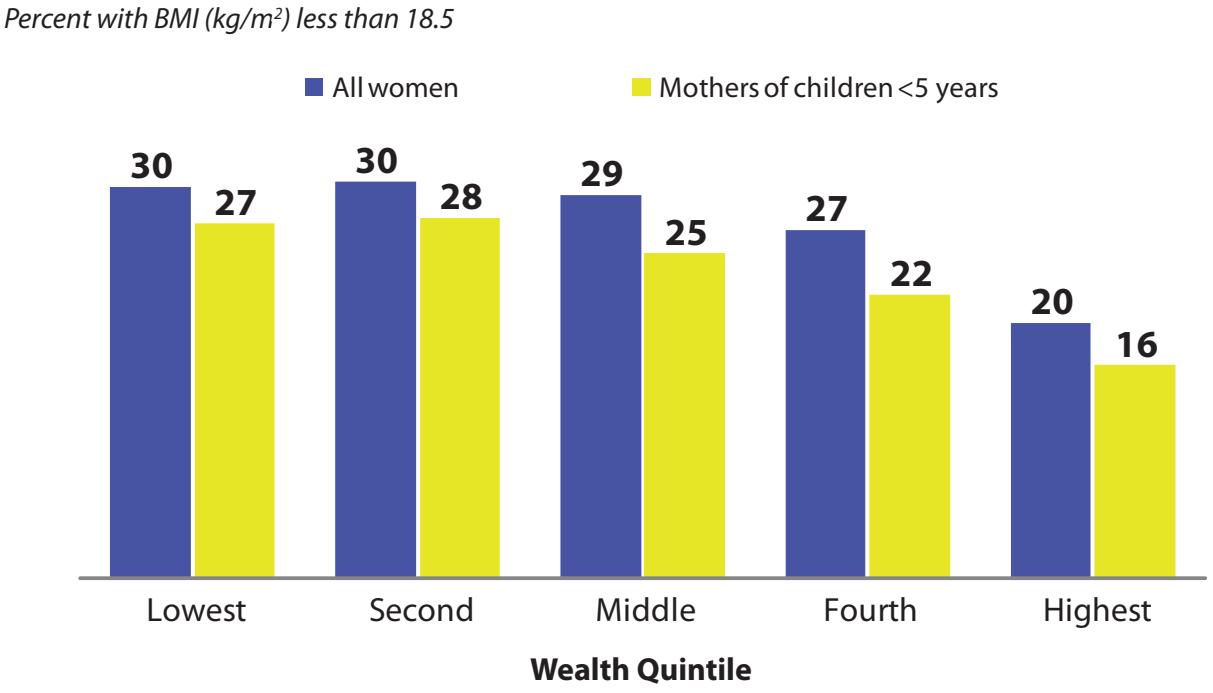
Malnutrition Among all Women and Mothers of Children Under Five Years by Education

Percent with BMI (kg/m²) less than 18.5



- There is an inverse relationship between malnutrition and a woman's education level. As education increases, malnutrition decreases.
- Twenty-seven percent of all women with no education are malnourished compared to 19 percent of women with secondary education or higher.
- Twenty-five percent of mothers of children under five years with no education are malnourished compared to 15 percent of mothers with secondary education or higher.

Malnutrition Among all Women and Mothers of Children Under Five Years by Wealth



The economic index used here was constructed using household asset data including ownership of a number of consumer items ranging from a television to a bicycle or car, as well as dwelling characteristics, such as source of drinking water, sanitation facilities, and type of material used for flooring. Households were then ranked and divided into quintiles. Households in the highest quintile are not necessarily wealthy in monetary terms, but they are better off socioeconomically than their neighbors.

- Wealth has an inverse impact on malnutrition among women and mothers. As wealth increases, rates of malnutrition decrease.
- Thirty percent of all women in the lowest wealth quintile are malnourished compared to 20 percent of all women in the highest wealth quintile.
- Twenty-seven percent of mothers of children under five years in the lowest wealth quintile are malnourished compared to 16 percent of mothers of children under five years in the highest wealth quintile