Nutrition of Young Children and Their Mothers in Ghana, 1998

AFRICA NUTRITION CHARTBOOKS

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NUTRITION OF YOUNG CHILDREN AND THEIR MOTHERS IN GHANA

Findings from the 1998 Ghana DHS Survey

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October 1999

This chartbook was produced by the Demographic and Health Surveys Program (DHS) which is funded by the U. S. Agency for International Development (USAID), through the Global Bureau Office of Health and Nutrition. The chartbook benefitted from funds provided by the USAID Bureau for Africa Office of Sustainable Development's Health and Human Resources Analysis for Africa Project (HHRAA). Copies of this chartbook may be obtained by contacting the DHS program, Macro International Inc., at the above address, or by telephone at (301) 572-0200, or by fax at (301) 572-0999.

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Introduction

Malnutrition[1] is one of the most important health and welfare problems among infants and young children in Ghana. It is a result of both inadequate food intake and illness. Inadequate food intake is a consequence of insufficient food available at the household level and/or improper feeding practices. Improper feeding practices include both the quality and quantity of foods offered to young children as well as the timing of their introduction. Poor sanitation puts young children at increased risk of illness, in particular diarrheal disease, which adversely affects their nutritional status. Both inadequate food intake and poor environmental sanitation reflect underlying social and economic conditions.

Malnutrition has significant health and economic consequences, the most serious of which is an increased risk of death. Other outcomes include an increased risk of illness and a lower level of cognitive development, which results in lower educational attainment. In adulthood, the accumulated effect of long-term malnutrition can be a reduction in worker productivity and increased absenteeism in the workplace; these may reduce a person's lifetime earning potential and ability to contribute to the national economy. Furthermore, malnutrition can result in adverse pregnancy outcomes.

The Ghana data presented here are from the 1998 Ghana Demographic and Health Survey (GDHS), a nationally representative survey of 6,003 households conducted by the Ghana Statistical Service - Government of Ghana. The study was undertaken with technical assistance from Macro International Inc. and funding from the Ghana Government and the U.S. Agency for International Development. Fieldwork was conducted from November 1998 to February 1999. Of the 3,194 living children age 0-59 months that were part of the study, 2,570 are included in this analysis. Nutritional data collected on these children include height, weight, age, micronutrients, breastfeeding history, and feeding patterns. Information was also collected on diarrhea and ARI in the two weeks prior to the survey and on relevant sociodemographic characteristics. For comparison purposes, data are also presented from DHS surveys conducted in other sub-Saharan countries.

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[1] The technical method of determining a *malnourished* population as defined by the National Center for Health Statistics (NCHS), the Centers for Disease Control (CDC), and the World Health Organization (WHO) is presented in Appendix 2.

Figure 1: Malnutrition among Children under 5 Years, Ghana

In Ghana:

- **Twenty-six percent of children age 0 to 59 months are chronically malnourished**. In other words, they are too short for their age or ***stunted***.[1] The proportion of children who are stunted is 11 times the level expected in a healthy, well-nourished population.

- **Acute malnutrition** manifested by ***wasting***,[2] results in a child being too thin for his or her height. It affects 10 percent of children, which is over four times the level expected in a healthy population.

- **Twenty-five percent of children under 5 years are *underweight***[3] for their age. This is 11 times the level expected in a healthy, well-nourished population.

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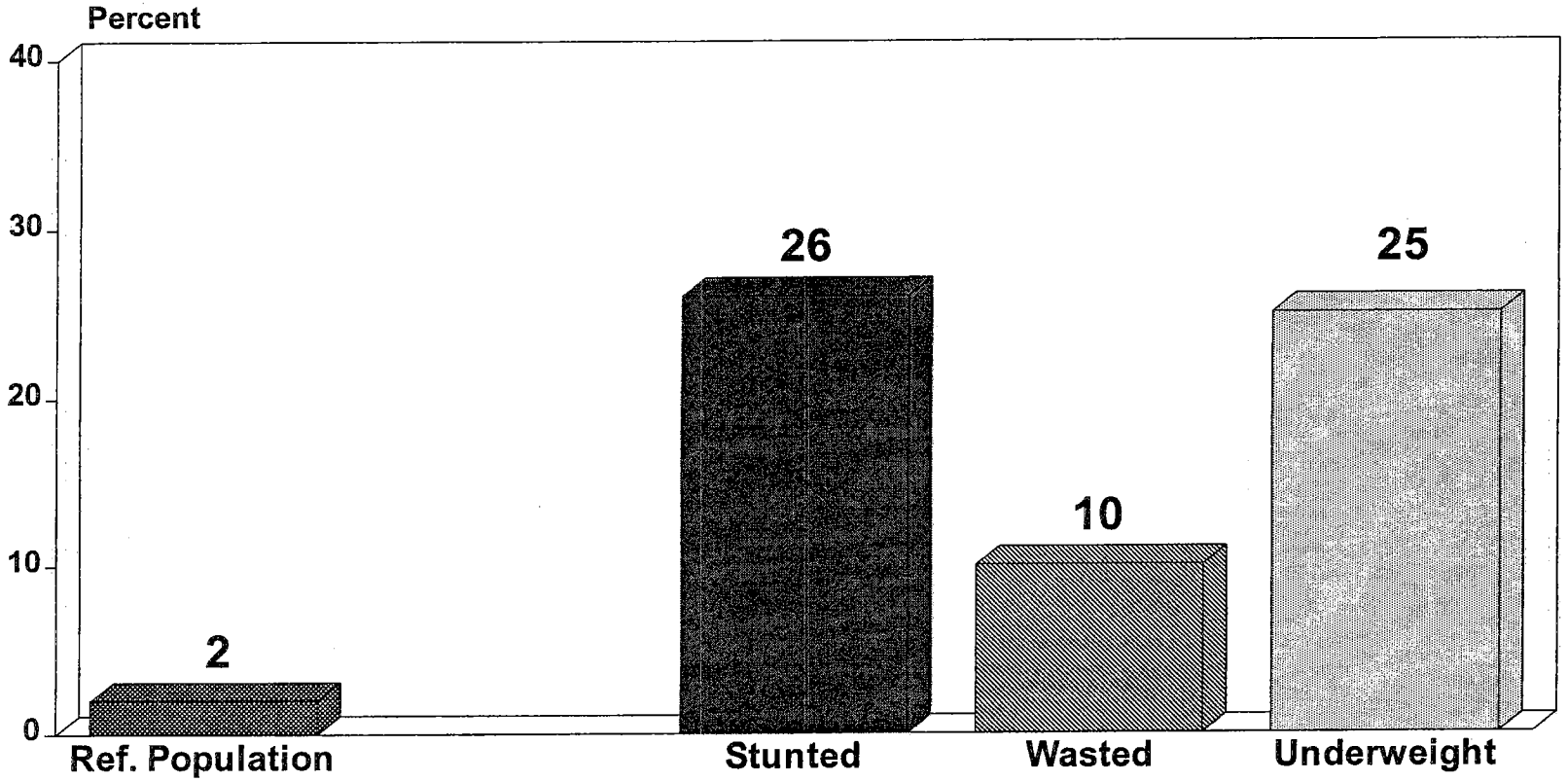
[1] A *stunted* child has a height-for-age Z-score that is below -2 standard deviations (SD) based on the NCHS/CDC/WHO reference population. Chronic malnutrition is the result of an inadequate intake of food over a long period of time and may be exacerbated by chronic illness.

[2] A *wasted* child has a weight-for-height Z-score that is below -2 SD based on the NCHS/CDC/WHO 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 below -2 SD based on the NCHS/CDC/WHO reference population. This condition can result from either chronic or acute malnutrition, or a combination of both.

Figure 1
Malnutrition among Children under 5 Years, Ghana



Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition; *underweight* reflects chronic or acute malnutrition, or a combination of both.

Source: GDHS 1998

Figure 2: Changes in Malnutrition among Children under 3 Years, Ghana 1993-1998

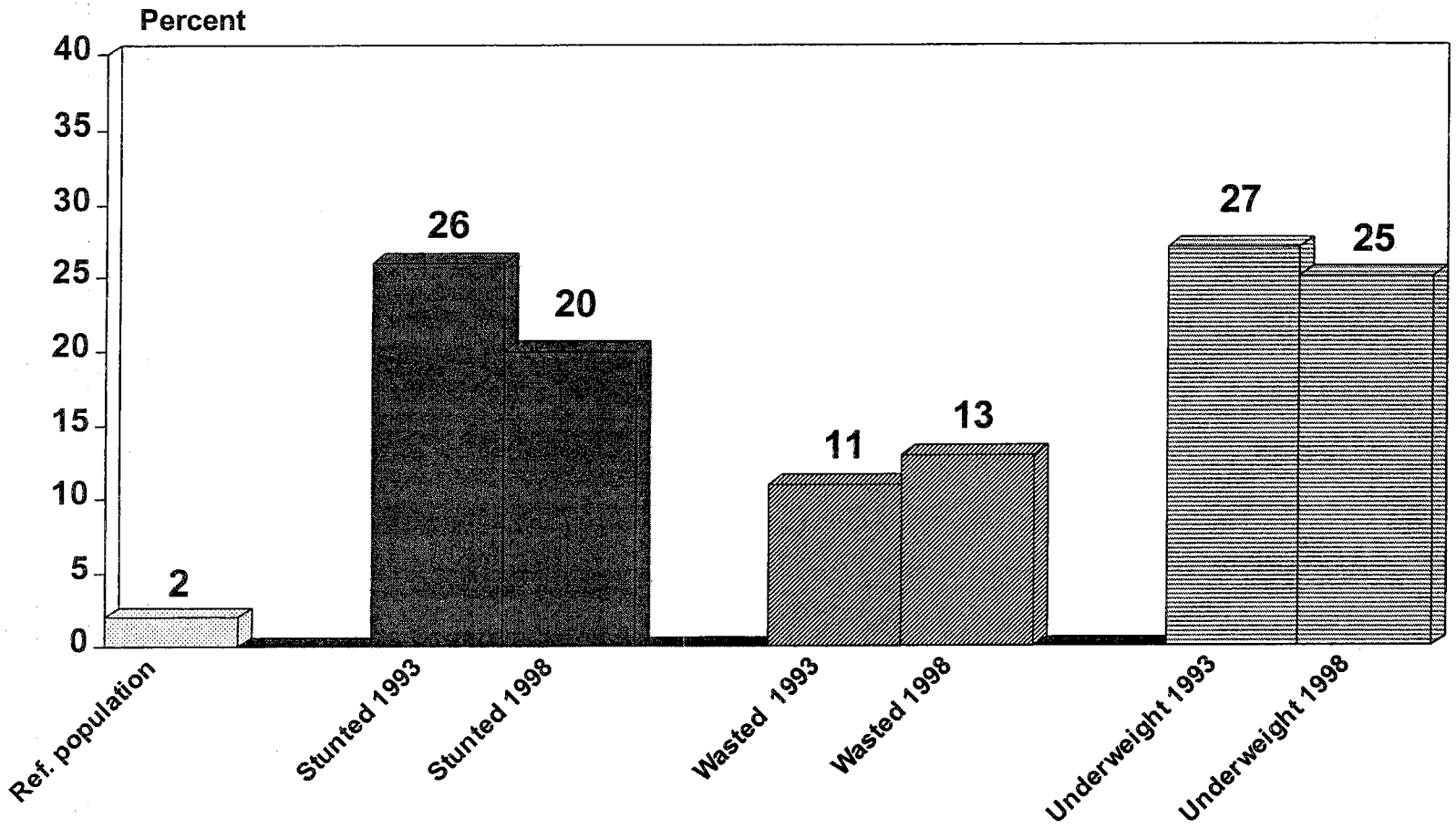
The findings of the 1998 GDHS suggest that the nutritional status of children in Ghana has changed since the 1993 GDHS. The percentage of children who are stunted decreased while the percentage of children who are wasted increased slightly.

- **The percentage of children under 3 years who are stunted decreased from 26 percent in 1993 to 21 percent in 1998, representing a decline in chronic malnutrition in Ghana.**

- Wasting (acute malnutrition) responds quickly to changing conditions of the weight of the child. For this reason, it reflects seasonal patterns of illness and food scarcity. The comparison of the prevalence of wasting in 1993 (11 percent) and the prevalence of wasting in 1998 (13 percent) should be done with caution.

- **The percentage of children under 3 years who are underweight did not change significantly.**

Figure 2
Changes in Malnutrition Rates among Children under 3 Years, Ghana 1993-1998



Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition; *underweight* reflects chronic or acute malnutrition, or a combination of both.

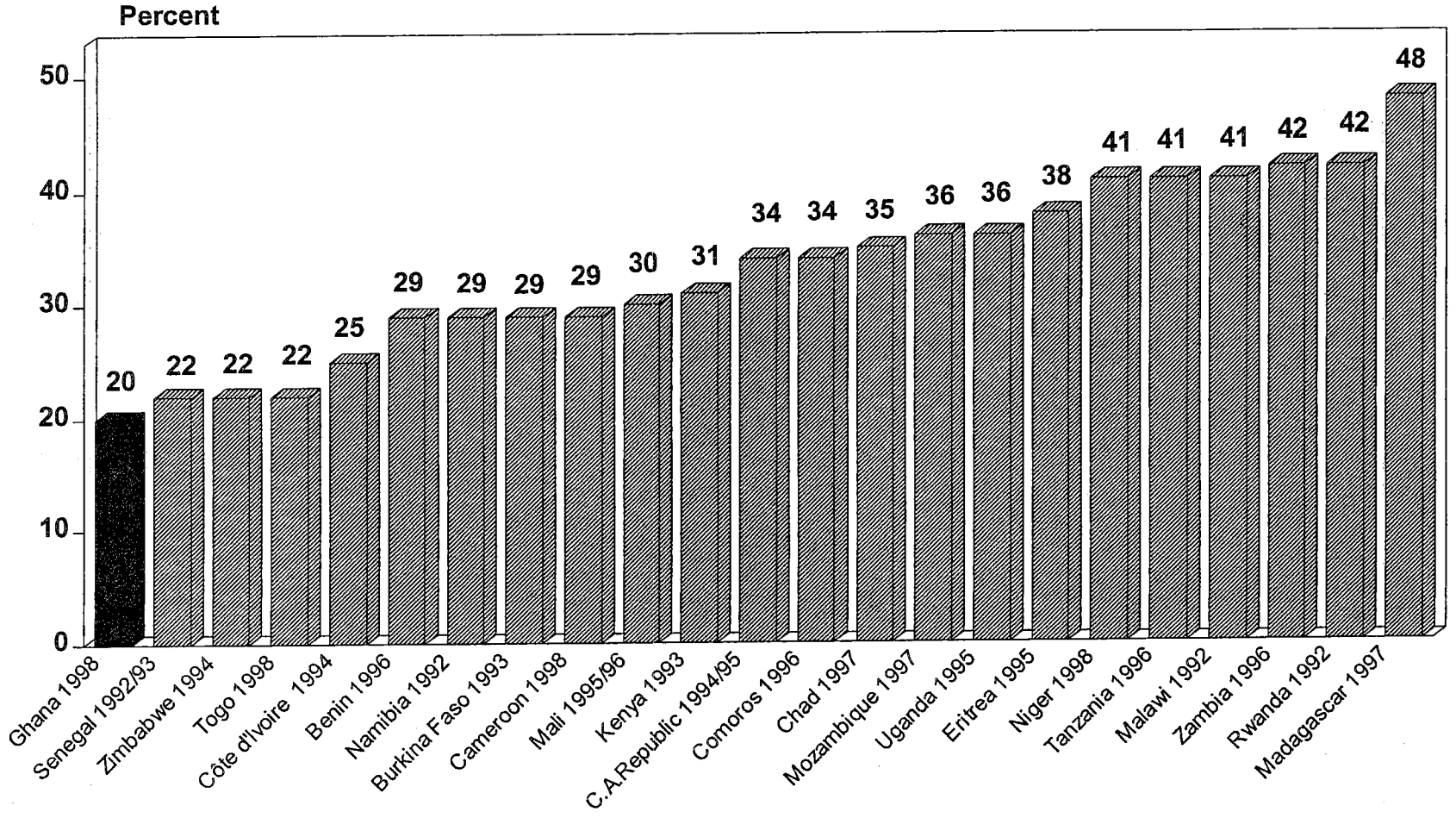
Source: GDHS 1993,1998

Figure 3: Stunting Among Children under 3 Years in Sub-Saharan Countries, DHS Surveys 1992-1998

Among the sub-Saharan countries surveyed:

- The percentage of children less than 3 years (0 to 35 months) who are *stunted* ranges from 20 to 48 percent. **At 20 percent, the proportion of stunted children in Ghana is the lowest among all the sub-Saharan countries.** 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, and recent shifts in social or economic policies.

Figure 3
Stunting among Children under 3 Years in Sub-Saharan Countries, DHS Surveys 1992-1998



Note: *Stunting* reflects chronic malnutrition.

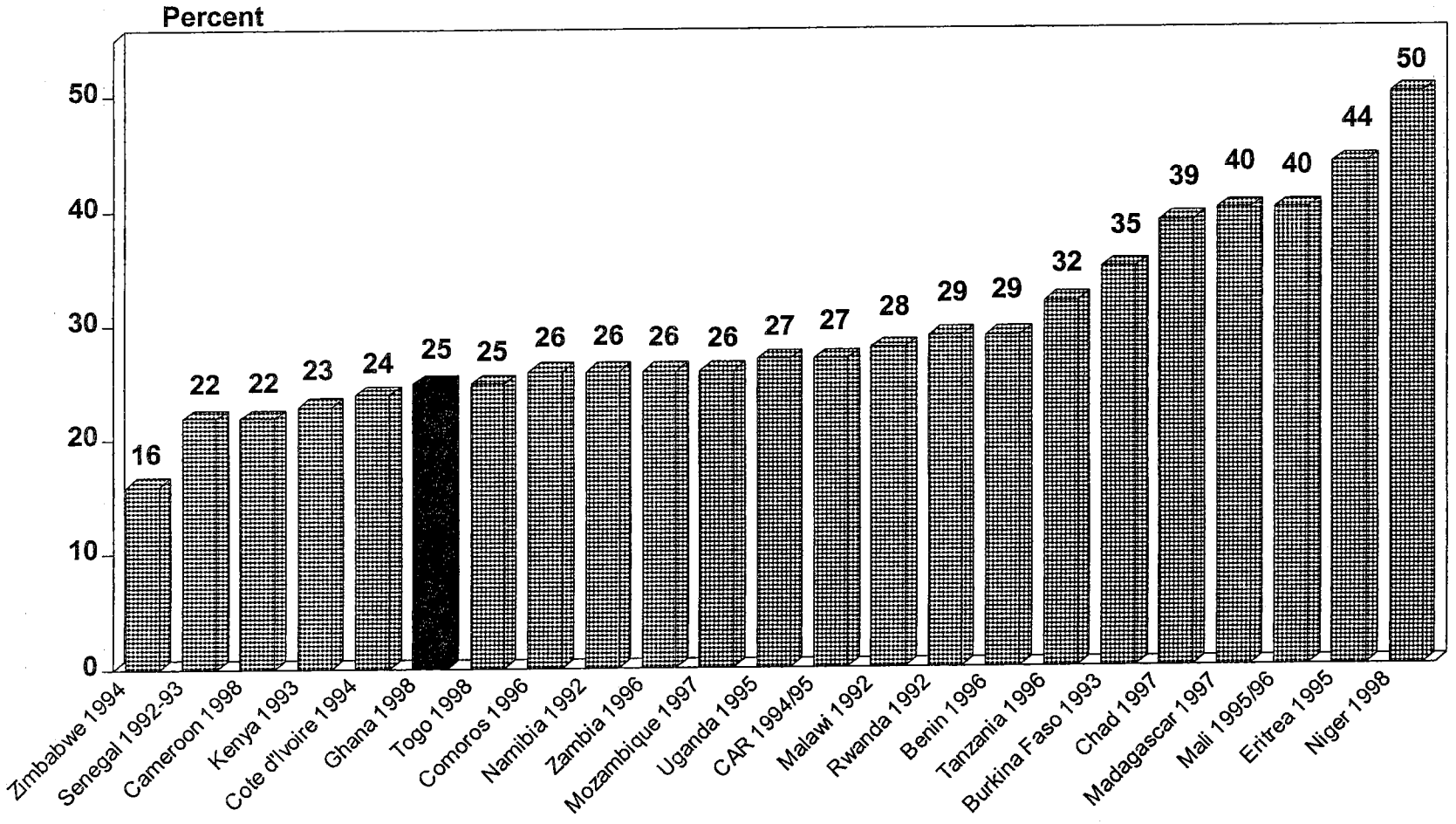
Source: DHS Surveys 1992-1998

Figure 4: Underweight among Children under 3 Years in Sub-Saharan Countries, DHS Surveys 1992-1998

Among the sub-Saharan countries surveyed:

- The percentage of children under age 3 who are *underweight* ranges from 16 to 50 percent. **With 25 percent of children underweight, Ghana is in the lower half of the sub-Saharan countries.** 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.

Figure 4
Underweight among Children under 3 Years in Sub-Saharan Countries, DHS Surveys 1992-1998



Note: ***Underweight*** **reflects chronic or acute malnutrition or a combination of both.**

Source: DHS Surveys 1992-1998

Figure 5: Stunting, Wasting and Underweight by Age, Ghana

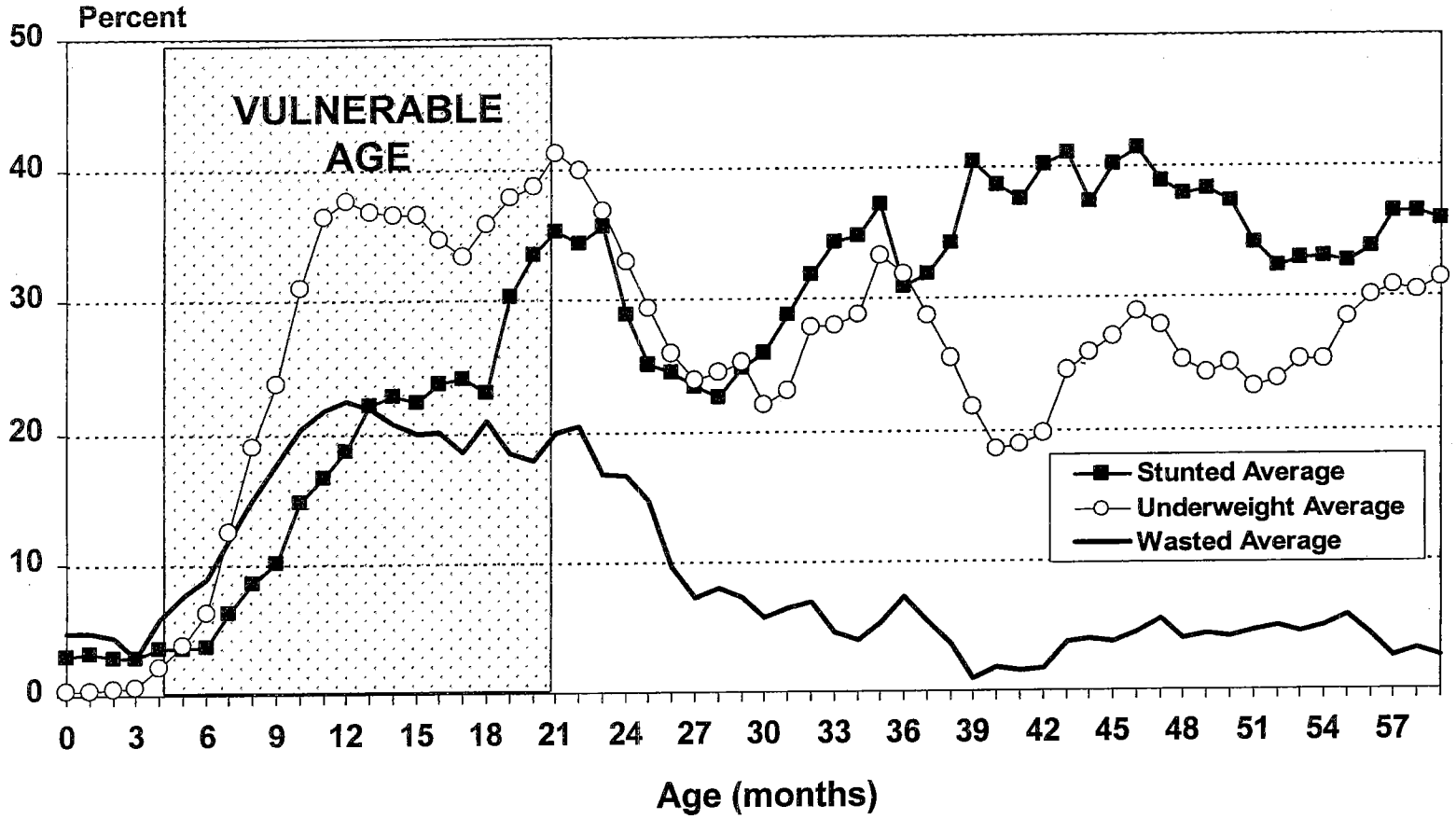
In Ghana, the time between 4 months and 21 months of age is a vulnerable period:

- **The proportion of children stunted increases between 7 and 23 months of age, at which time it peaks at 35 percent.** This is the period where the cumulative effects of stunting result in damaging effects on the child. The proportion of children stunted drops to approximately 25 percent between 25 and 30 months and increases again to approximately 37 percent between 35 and 50 months.

- **The proportion of children wasted rises sharply between 3 and 12 months of age, when it reaches 22 percent.** This rate remains around 20 percent until 22 months of age, then decreases rapidly. After 27 months, the prevalence rate averages 5 percent, which is twice that of the reference population.

- **The proportion of children underweight rises quickly between 6 and 12 months of age to approximately 37 percent.** It peaks again at 21 months with a prevalence rate of 41 percent. From 4 to 21 months is the age when the highest proportion of children are underweight and when serious effort should be devoted to reducing child malnutrition. After 25 months, the proportion of children underweight fluctuates between 20 and 30 percent.

Figure 5
Stunting, Wasting, and Underweight by Age, Ghana



Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition; *underweight* reflects chronic or acute malnutrition, or a combination of both. Plotted values are smoothed by a five-month moving average.

Source: GDHS 1998

Figure 6: Feeding Practices for Infants under 4 Months, Ghana

Improper feeding practices and diarrheal disease are important determinants of malnutrition. The World Health Organization (WHO) recommends that *all infants be exclusively breastfed from birth until about 6 months of age.*[1] In other words, infants should be fed only breast milk during the first six months of life.

In Ghana, the introduction of liquids, such as water, sugar water, juice, formula, and solid foods, takes place earlier than the recommended age of about 6 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 and thus puts them at greater risk of diarrheal disease.

- **In Ghana, 36 percent of children under the age of 4 months are exclusively breastfed, as is recommended by WHO.**

- **Twenty-five percent of infants under 4 months are given some form of complementary liquids or solids other than water, which is not recommended.**

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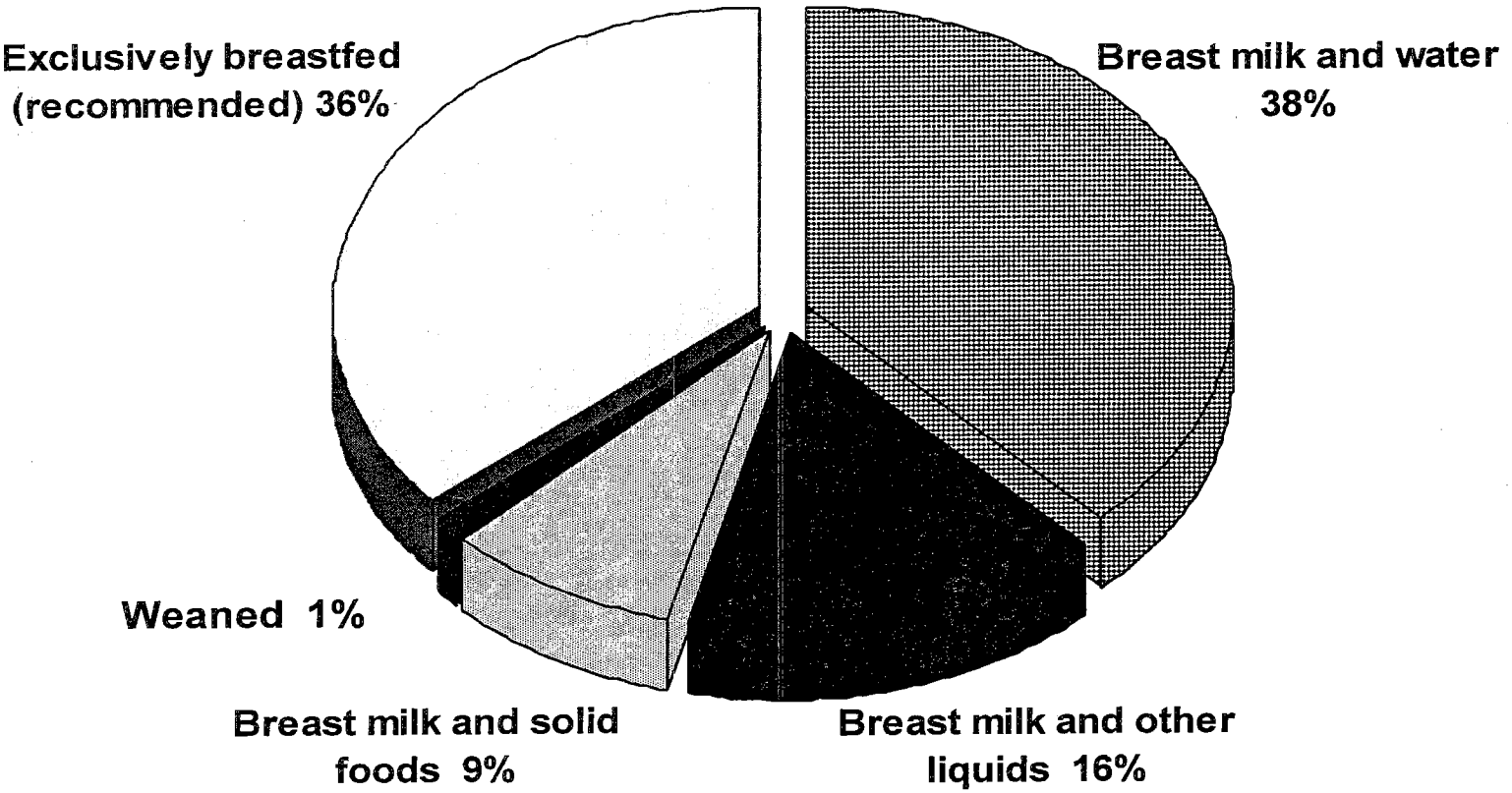
[1] World Health Organization, Forty-seventh World Health Assembly (WHA 47.5), May 9, 1994.

Figure 6
Feeding Practices for Infants under 4 Months, Ghana



Source: GDHS 1998

Note: WHO recommends that all infants be breastfed exclusively up to six months of age.

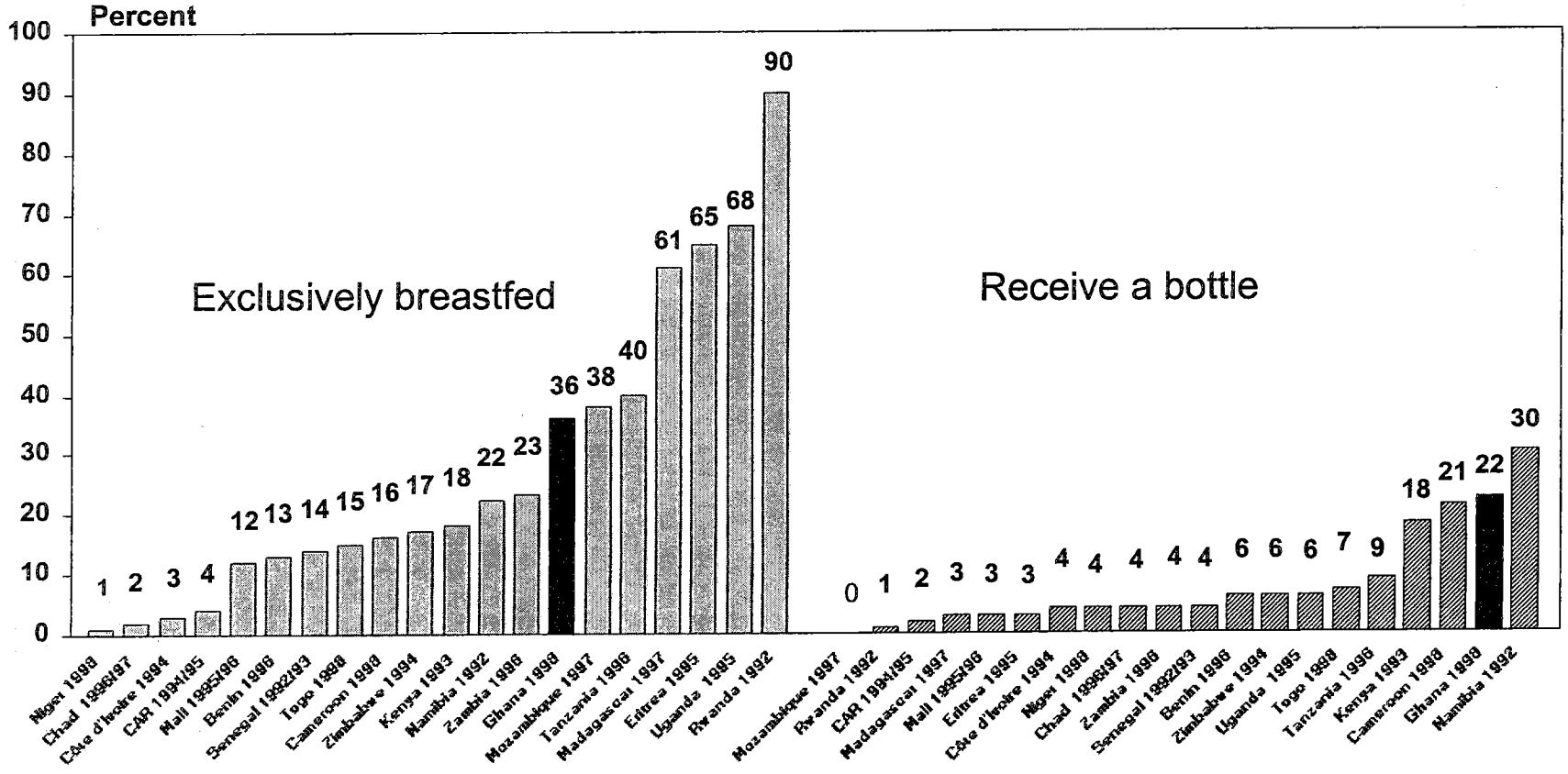
Figure 7: Infants under 4 Months Who are Exclusively Breastfed and Those Who Receive a Bottle in Ghana Compared with Other Sub-Saharan Countries

The failure to exclusively breastfeed young infants and the introduction of liquids and solid foods at too early an age increases the risk of diarrheal disease, an important cause of mortality in Africa.

- In most of the sub-Saharan countries surveyed, relatively few mothers of infants under 4 months follow the recommended practice of breastfeeding exclusively. **In Ghana, 36 percent of mothers breastfeed their young infants exclusively**. This places Ghana in the upper range of sub-Saharan countries following the international recommendation.

- **Bottle-feeding, which is not recommended by WHO, is practiced by 22 percent of mothers of infants under 4 months in Ghana.** Improper sanitation with bottle-feeding can introduce pathogens to the infant. Infant formulas (which are often watered down) and other types of milk do not provide comparable nutrition to breast milk for infants less than 6 months of age. For these reasons, bottle-feeding puts infants at a higher risk of illness and malnutrition.

Figure 7
Infants under 4 Months Who Are Exclusively Breastfed and Those Who Receive a Bottle in Ghana Compared with Other Sub-Saharan Countries



Note: Information on feeding practices is based on the 24 hours preceding the survey. WHO recommends that all infants should receive nothing but breast milk up to 6 months of age.

Source: DHS Surveys 1992-1998

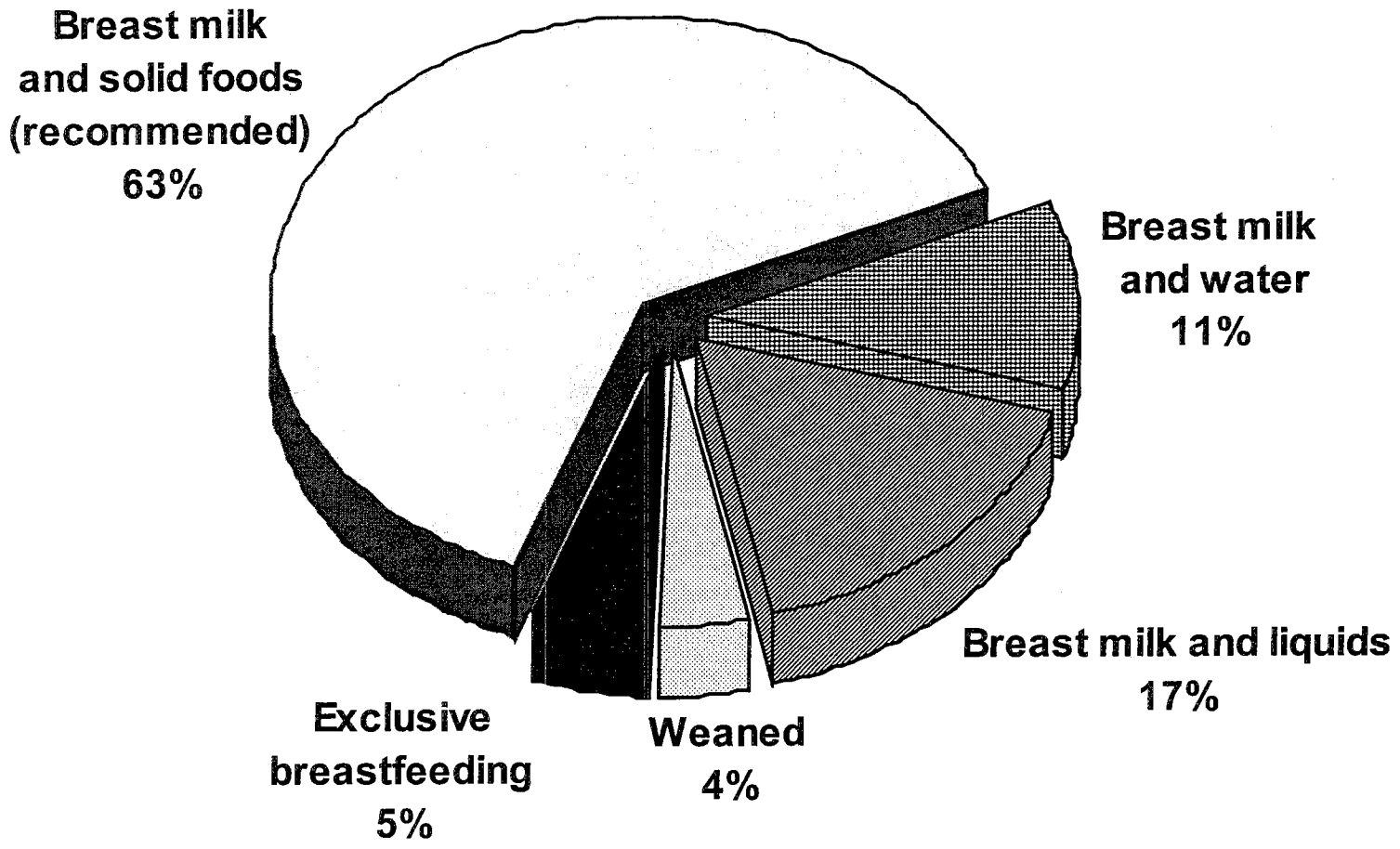
Figure 8: Feeding Practices for Infants Age 6 to 9 Months, Ghana

The World Health Organization recommends that solid foods be introduced to infants around the age of 6 months because breast milk alone is no longer sufficient to maintain a child's optimal growth. Thus, *all infants over 6 months of age should be receiving solid foods* along with breast milk.

- **In Ghana, 63 percent of infants age 6 to 9 months are fed solid foods. This means that two-thirds of infants age 6 to 9 months are fed according to the recommended practice.**

- **Thirty-two percent of infants age 6 to 9 months are not fed solid foods in addition to breast milk, which puts children at risk of malnutrition.** Only 4 percent of children are weaned by this period, meaning that only a small minority of children do not receive the benefits of breast milk at this age.

Figure 8
Feeding Practices for Infants Age 6 to 9 Months, Ghana



Note: WHO recommends that by the age of 6 months all infants should receive solid foods and liquids in addition to breast milk.

Source: GDHS 1998

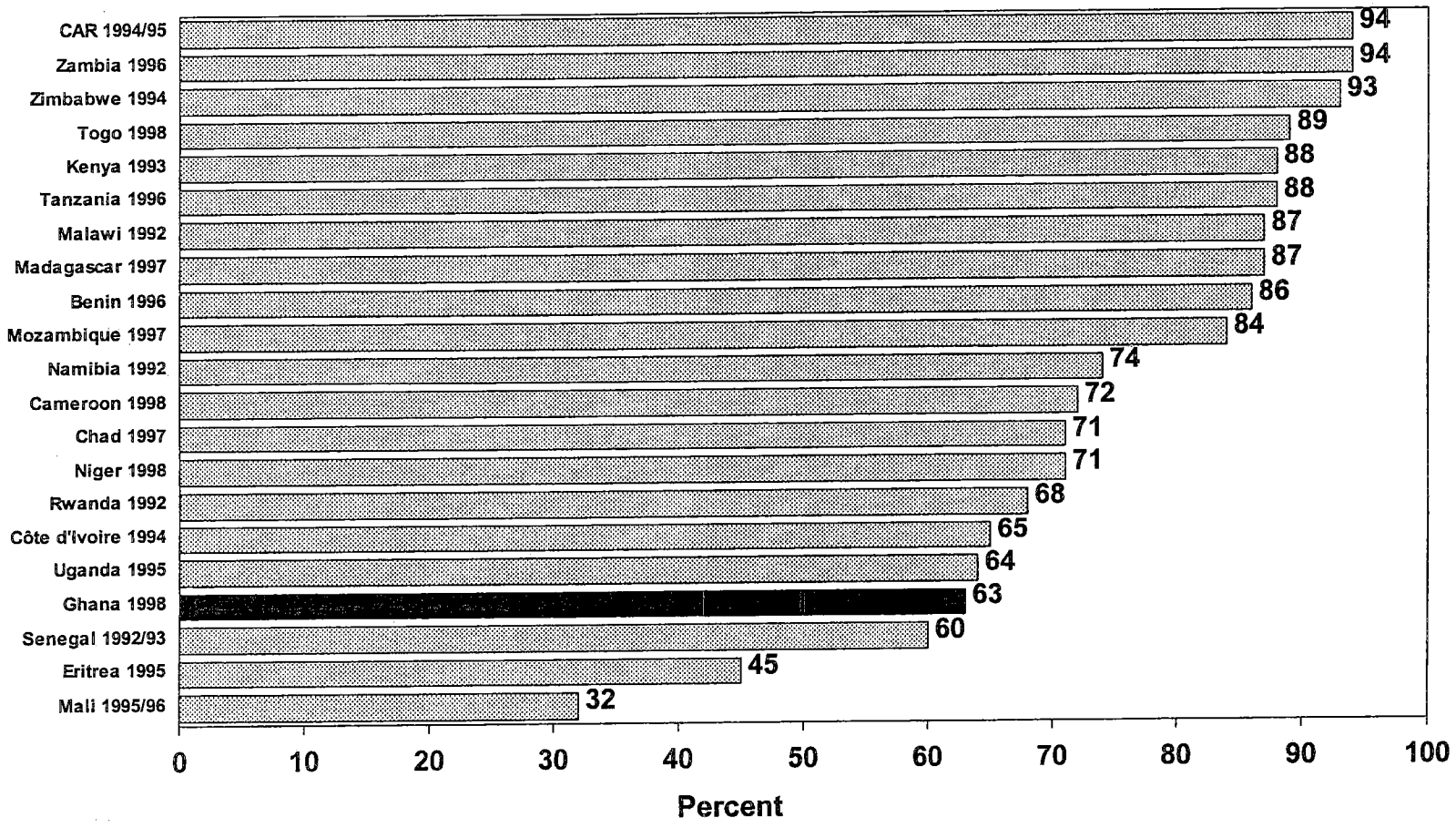
Figure 9: Infants Age 6 to 9 Months Receiving Solid Foods in Addition to Breast Milk in Ghana Compared with Other Sub-Saharan Countries

Optimal infant feeding practices include the introduction of complementary foods at about 6 months of age. The introduction of complementary feeding is necessary because breast milk is no longer sufficient to satisfy the developing infant's energy, protein, and micronutrient needs. All infants between age 6 and 9 months should receive complementary foods in addition to breast milk.

In Ghana:

- Sixty-three percent of infants age 6 to 9 months receive solid food in addition to breast milk. This is among the lowest levels of complementary feeding in the countries surveyed. Thirty-seven percent are not given complementary foods and are more susceptible to stunting and wasting.

Figure 9
Infants Age 6 to 9 Months Receiving Solid Foods in Addition to Breast Milk in Ghana Compared with Other Sub-Saharan Countries



Note: WHO recommends that by the age of 6 months all infants should receive solid foods and liquids in addition to breast milk.

Source: DHS Surveys 1992-1998

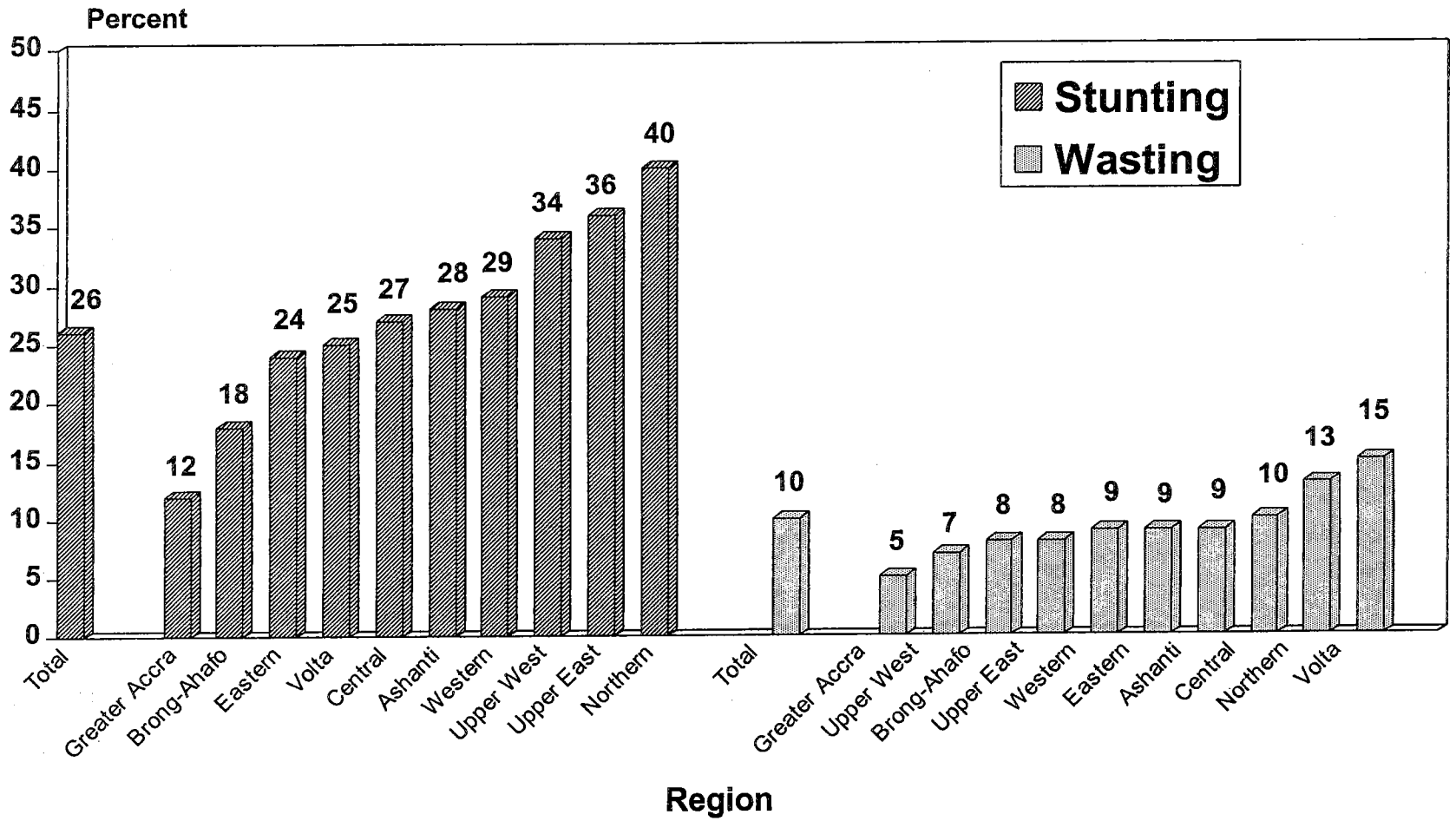
Figure 10: Stunting and Wasting among Children under 5 Years by Region, Ghana

In Ghana:

- Stunting ranges from 12 to 40 percent among children in the 10 regions. **The highest levels of stunting were reported in the Upper East and Northern regions (36 percent and 40 percent, respectively) where over one-third of children under age 5 are stunted.** The lowest level of stunting (12 percent) was reported in the peri-urban region of Accra.

- **Wasting ranges from 5 to 15 percent among children in the 10 regions**. The highest levels were found in the Northern and Volta regions (13 and 15 percent, respectively), while the lowest level was found in the Greater Accra region (5 percent).

Figure 10
Stunting and Wasting among Children under 5 Years by Region, Ghana



Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition.

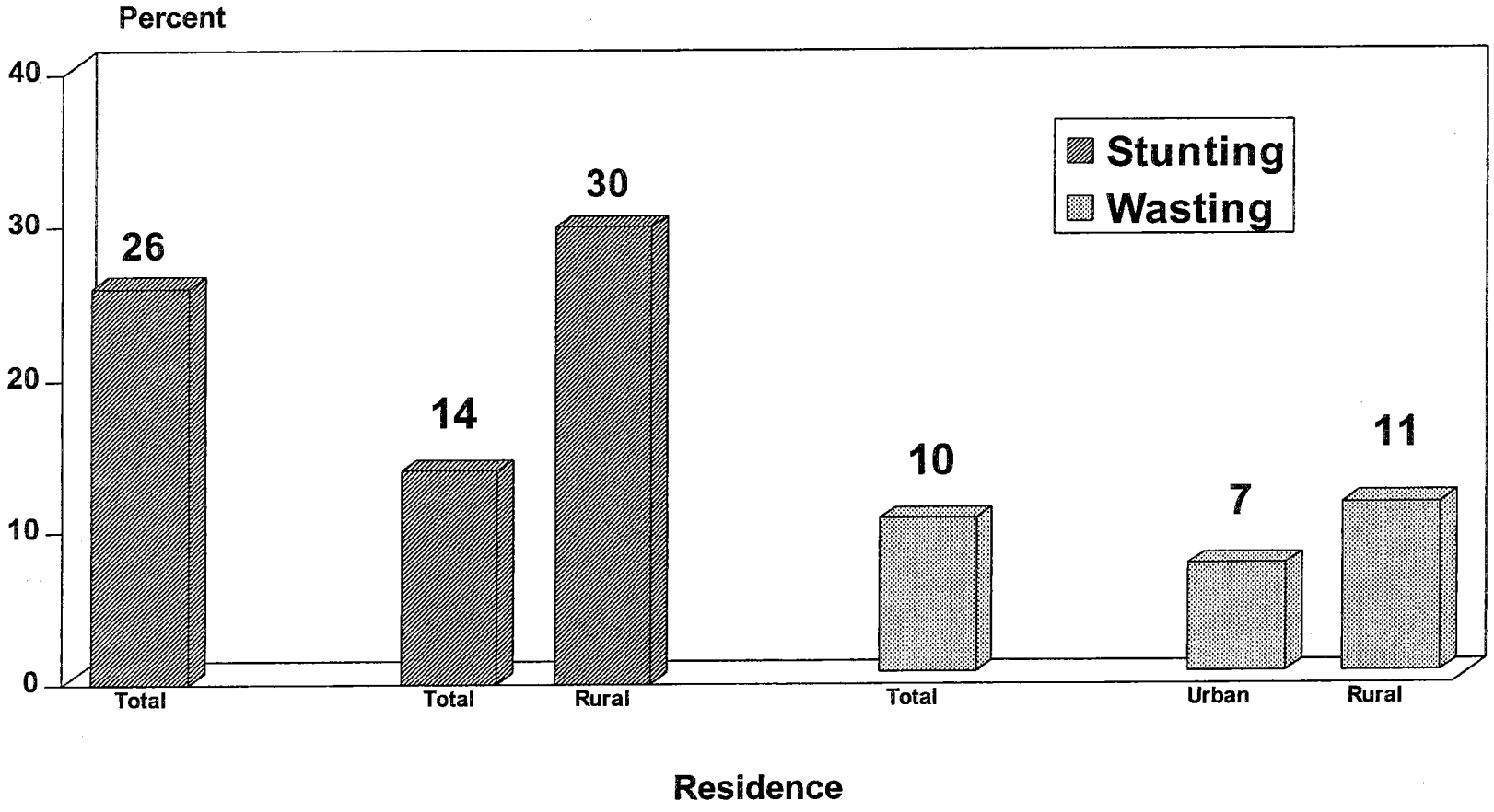
Source: GDHS 1998

Figure 11: Stunting and Wasting among Children under 5 Years by Urban-Rural Residence, Ghana

In Ghana:

- **Thirty percent of rural children are stunted. In urban areas, stunting is 14 percent.**
- **Eleven percent of rural children are wasted compared with only 7 percent of children in the urban areas.**

Figure 11
Stunting and Wasting among Children under 5 Years by Urban-Rural Residence, Ghana



Note: Stunting reflects chronic malnutrition; *wasting* reflects acute malnutrition.

Source: GDHS 1998

Figure 12: Stunting and Wasting among Children under 5 Years by Mother's Education, Ghana

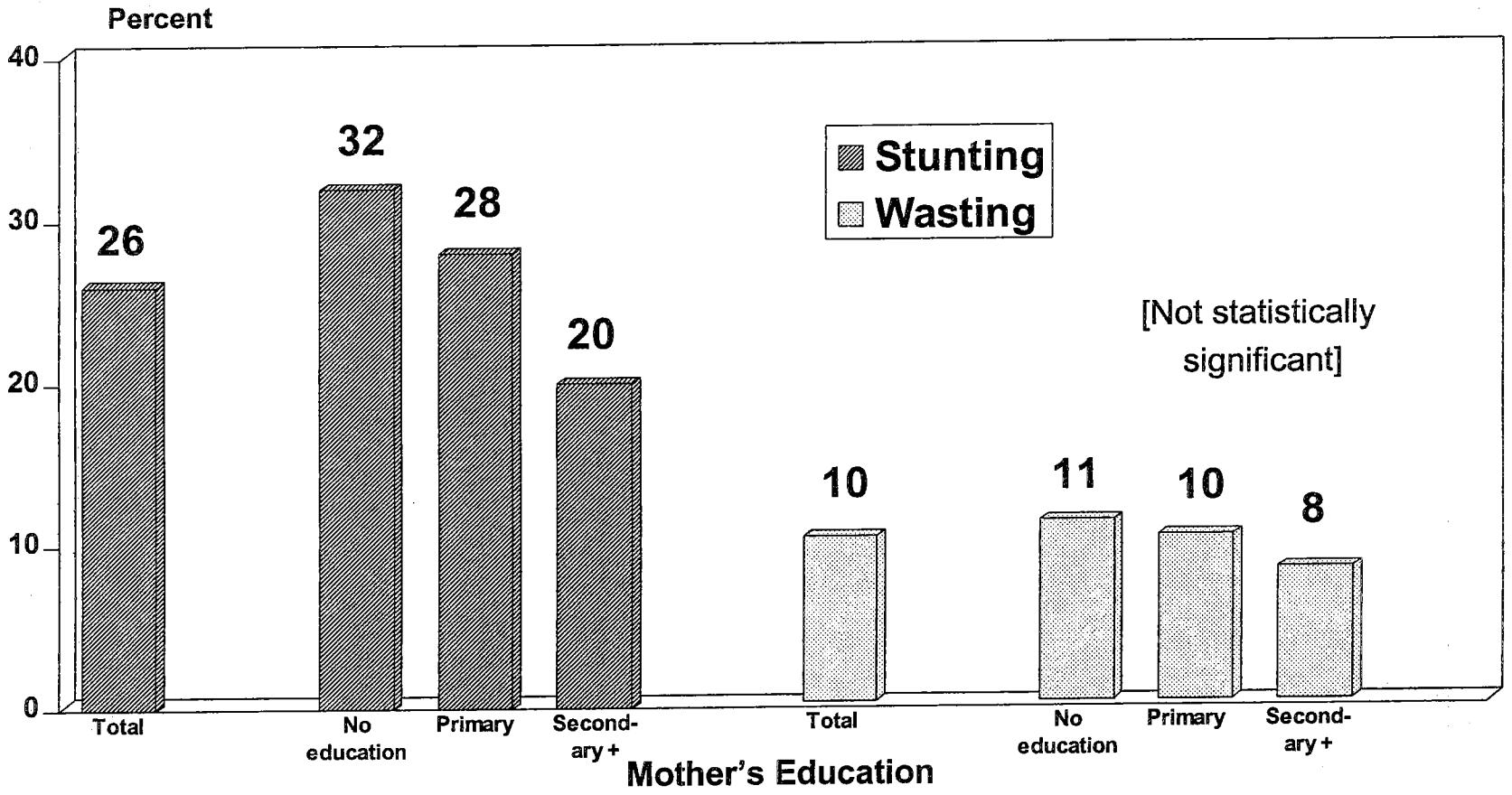
Maternal education is related to knowledge of good child-care practices and to household wealth. In Ghana, 37 percent of mothers of children under 5 years of age have never attended school, while 20 percent have primary education and 43 percent have secondary or higher education. There are variations in school attendance, especially between urban and rural areas. In rural areas, 42 percent of mothers have never attended school and only 37 percent have gone to secondary school. In contrast, 21 percent of mothers in urban areas have never attended school and 60 percent have attended secondary school.

Among regions, the highest percentage of mothers reporting a secondary school education live in the Ashanti and Eastern regions (both 57 percent). The highest percentage of mothers who reported not attending school live in the Northern, Upper West, and Upper East regions (87 percent, 85 percent, and 83 percent, respectively).

- Maternal education has an inverse relationship with stunting in Ghana. **As the level of maternal education increases, the level of stunting decreases.** There is a small difference in stunting rates between children of mothers with no education and children whose mothers have primary education; a larger difference exists between children of mothers with no education and children whose mothers have secondary education.

- **Wasting does not appear related to maternal education.**

Figure 12
Stunting and Wasting among Children under 5 Years by Mother's Education, Ghana



Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition.

Source: GDHS 1998

Figure 13: Stunting and Wasting among Children under 5 Years by Source of Drinking Water, Ghana

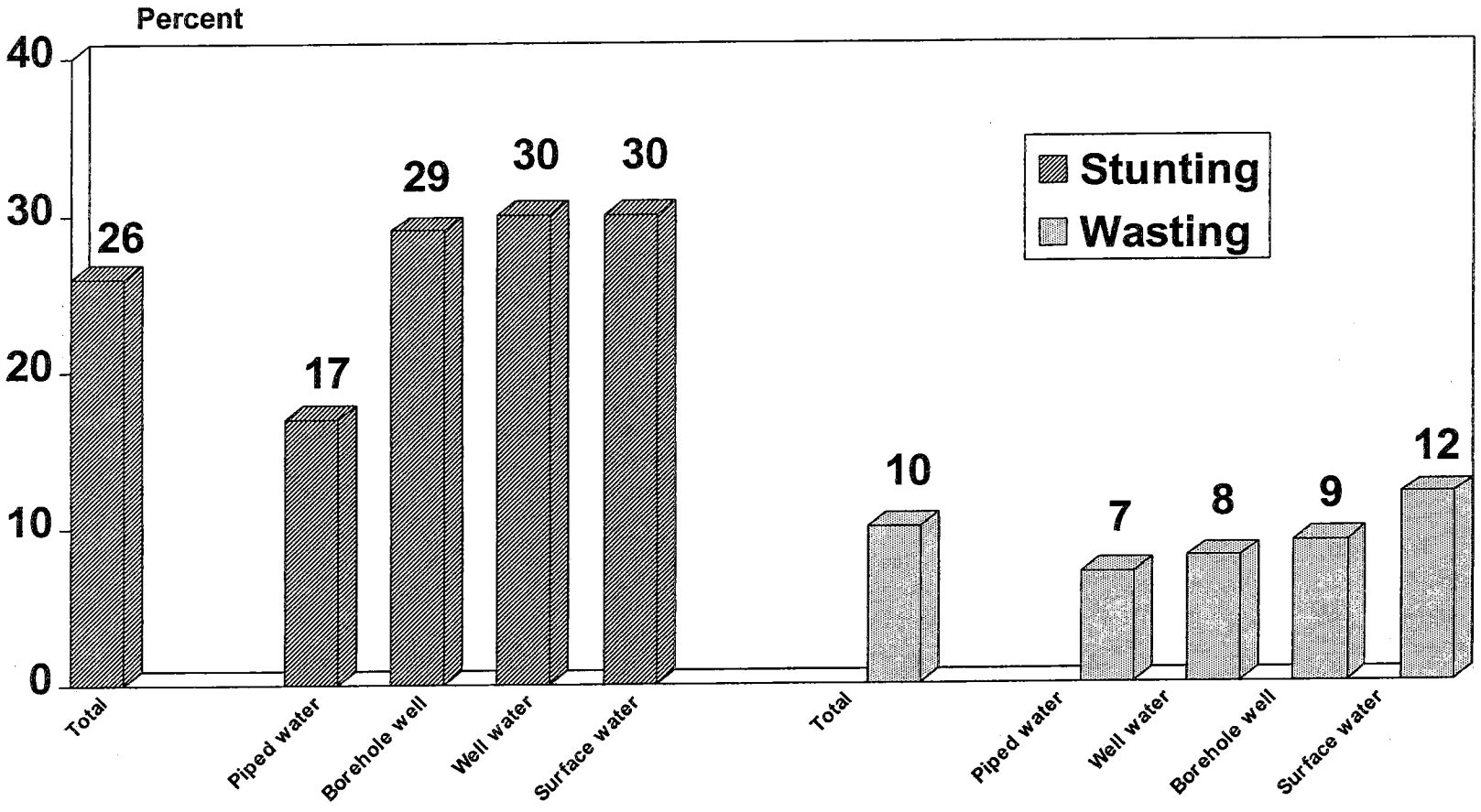
A household's source of drinking water is linked with its socioeconomic status. Poor households are more likely to obtain drinking water from contaminated sources such as surface water or open wells. Without an adequate supply of good-quality water, the risks of food contamination, diarrheal disease, and malnutrition rise. Infants and children from households not having a private tap are at greater risk of being malnourished than those from households with this amenity. Among households surveyed with children under 5 years, 32 percent use piped water, 32 percent obtain drinking water from surface water sources, 22 percent use borehole wells, and 14 percent use shallow wells.

- **The highest rates of stunting among children under 5 years of age (30 percent) were found in households that used surface water and public wells.** This level of stunting is 13 times the level expected in a well-nourished population.

- **Among households with piped water, 17 percent of children are stunted.** Although easy access to indoor tap water may be associated with reduced risk of malnutrition, it does not ensure that a child will be well-nourished.

- **Wasting among children under 5 years of age is highest in households that use surface water (12 percent) and lowest in households with piped water (7 percent).**

Figure 13
Stunting and Wasting among Children under 5 Years by Source of Drinking Water, Ghana



Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition.

Source: GDHS 1998

Figure 14: Stunting and Wasting among Children under 5 Years by Type of Toilet, Ghana

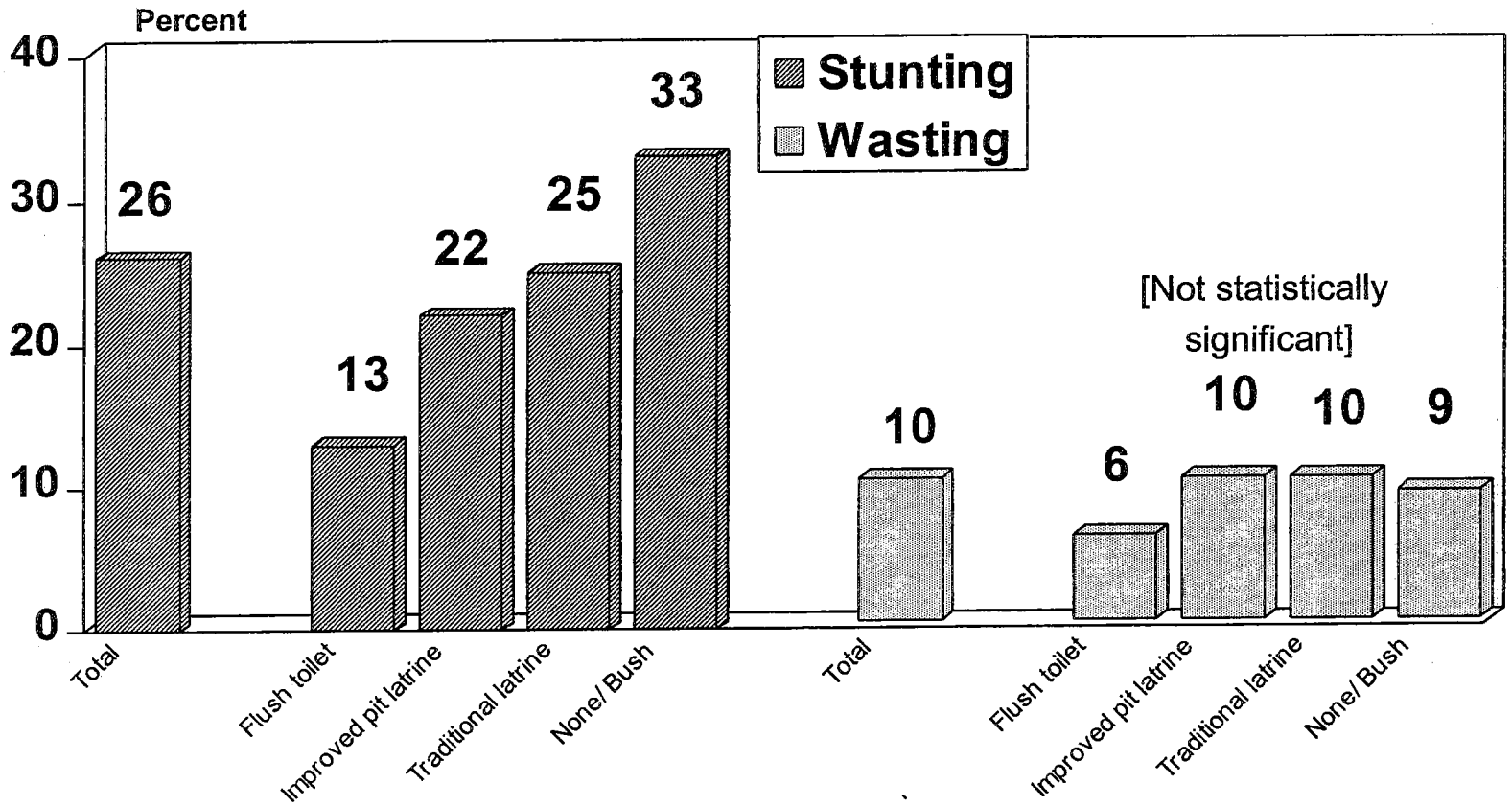
The type of toilet used by a household reflects its wealth, and poor households are less likely to have adequate toilet facilities. Inadequate sanitation facilities result in an increased risk of diarrheal disease, which contributes to malnutrition. Infants and children from households that do not have ready access to a flush toilet are at greater risk of being malnourished than children from households with this amenity. In Ghana, 26 percent of surveyed households have no facilities, 49 percent have a traditional latrine, 21 have an improved pit latrine, and 4 percent have a private or shared flush toilet.

- **Thirty-three percent of children in households that do not have toilet facilities are stunted. Conditions in households with traditional pit latrines or improved pit latrines are better (25 percent and 22 percent, respectively).**

- **In households with access to flush toilets, the proportion of children stunted is 13 percent.**

- **There is no direct relationship between wasting and type of toilet facility.**

Figure 14
Stunting and Wasting among Children under 3 Years by Type of Toilet, Ghana



Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition.

Source: GDHS 1998

Figure 15: Diarrhea and Cough with Rapid Breathing among Children under 5 Years, Ghana

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

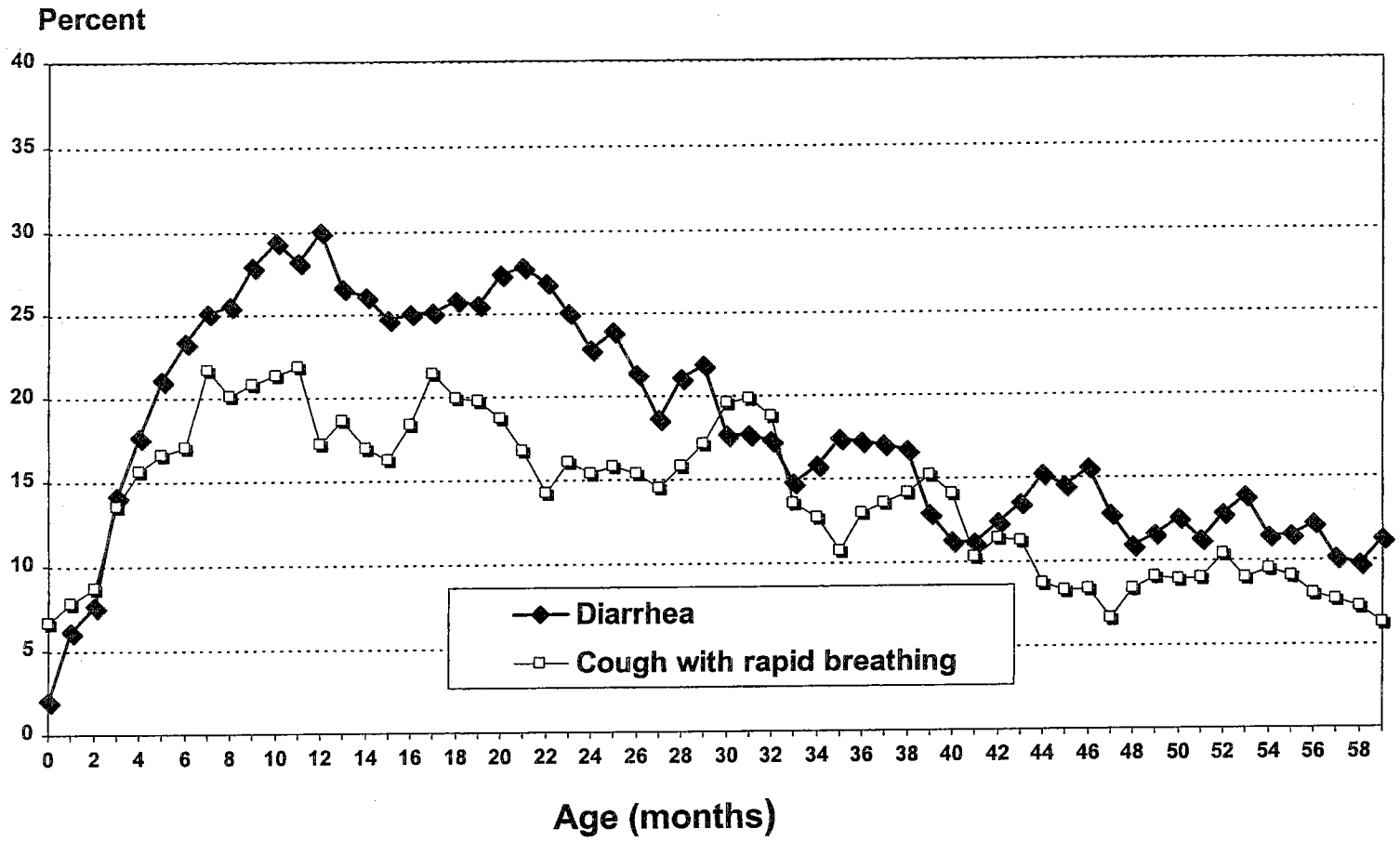
In Ghana:

- **The prevalence of cough with rapid breathing increases rapidly until the sixth month when it peaks at 22 percent**. Between 6 and 30 months it fluctuates between 15 and 20 percent. After about the third year it declines steadily. In the fourth year, the prevalence of cough with rapid breathing averages 7 percent.

- **Approximately 22 percent of children under 5 years of age had diarrhea in the two weeks preceding the survey.** The prevalence of diarrhea increases from the first to the twelfth month, when it peaks at 30 percent. By the end of two years the prevalence of diarrhea is 25 percent. From the third year and thereafter, the prevalence of diarrhea averages 12 percent.

The rapid rise in the prevalence of diarrhea during infancy reflects the increased risk of pathogen contamination associated with the early introduction of water, other liquids, and solid foods. In addition, once infants begin to crawl and move around, they tend to put objects into their mouth, again increasing the risk of pathogen contamination.

Figure 15
Diarrhea and Cough with Rapid Breathing among Children under 5 Years, Ghana



Note: Five-month moving average

Source: GDHS 1998

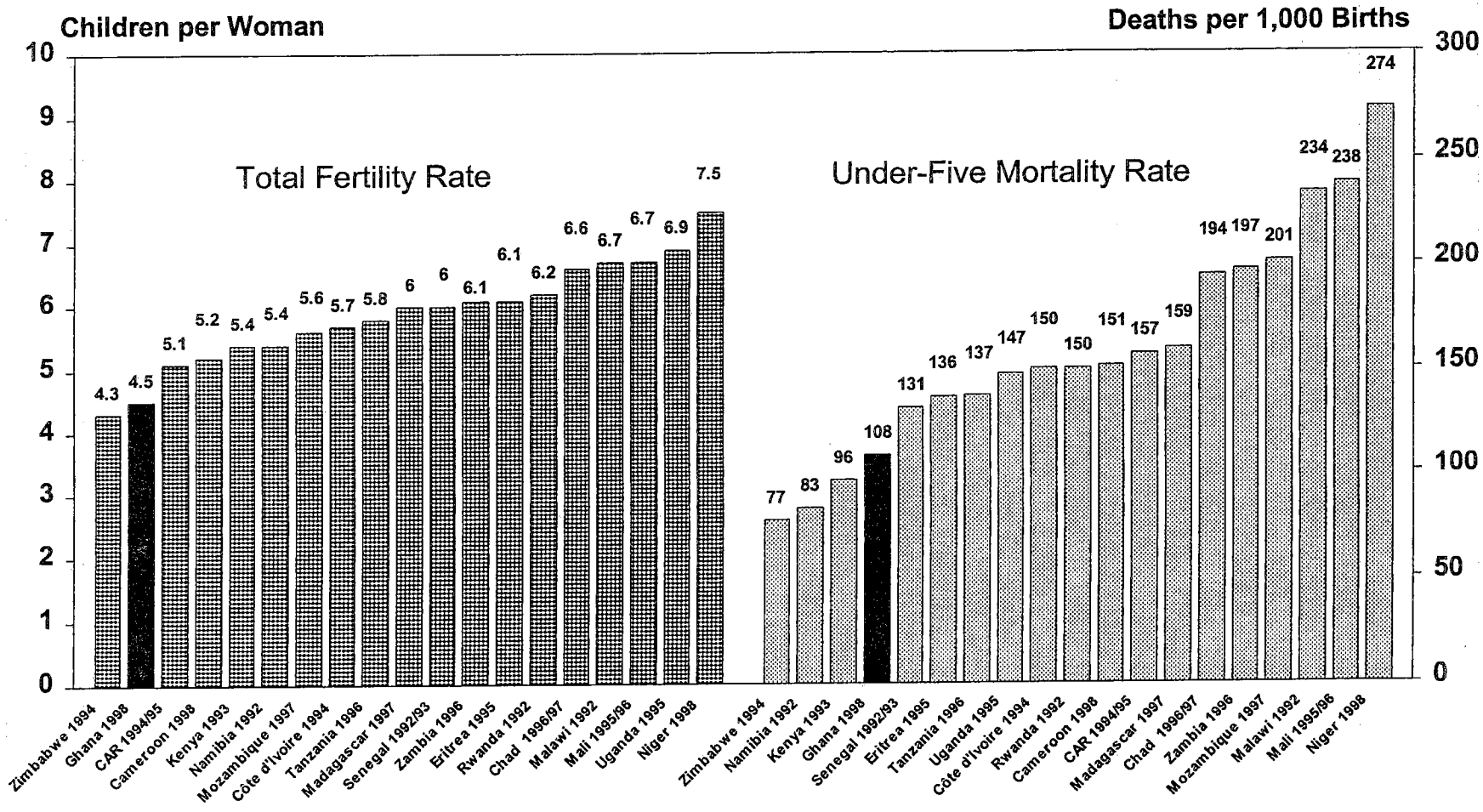
Figure 16: Fertility and Child Mortality in Ghana Compared with Other Sub-Saharan Countries

High fertility rates, especially when accompanied by short intervals between births, are detrimental to children's nutritional status. In most countries in sub-Saharan Africa, families have scarce resources to provide adequate nutrition and health care for their children. As the number of children per woman increases, fewer household resources are available for each child. High fertility also has a negative impact on women's health, thus increasing the chances that a mother may not be able to breastfeed or care for her children adequately. Young children, who are more vulnerable to malnutrition and disease, are more likely to die.

- **At current fertility levels, a woman in Ghana will have an average of 4.5 children by the end of her childbearing years.** (This is the total fertility rate for women age 15 to 49 years.) The total fertility rate for Ghana is among the lowest of the sub-Saharan countries surveyed.

- **Ghana's under-five mortality rate (108 deaths per 1,000 births) indicates that approximately 11 percent of children born in Ghana will die before their fifth birthday.** This rate is among the lowest for the countries surveyed.

Figure 16
Fertility and Child Mortality in Ghana Compared with Other Sub-Saharan Countries



Source: DHS Surveys 1992-1998

Figure 17: Survival and Nutritional Status of Children, Ghana

Malnutrition and mortality both take a tremendous toll on young children. This figure illustrates the proportion of children who have died or are malnourished at each month of age.

In Ghana:

- **Between birth and 22 months of age, the percentage of children who are alive and not malnourished drops rapidly from 90 percent to approximately 42 percent.**

- At the age of 22 months, 8 percent of children have died and 50 percent are severely or moderately malnourished.[1]

- **After 32 months of age, an average of 50 percent of children are alive and not malnourished.** These conditions remain roughly the same from the third to the fifth year of life.

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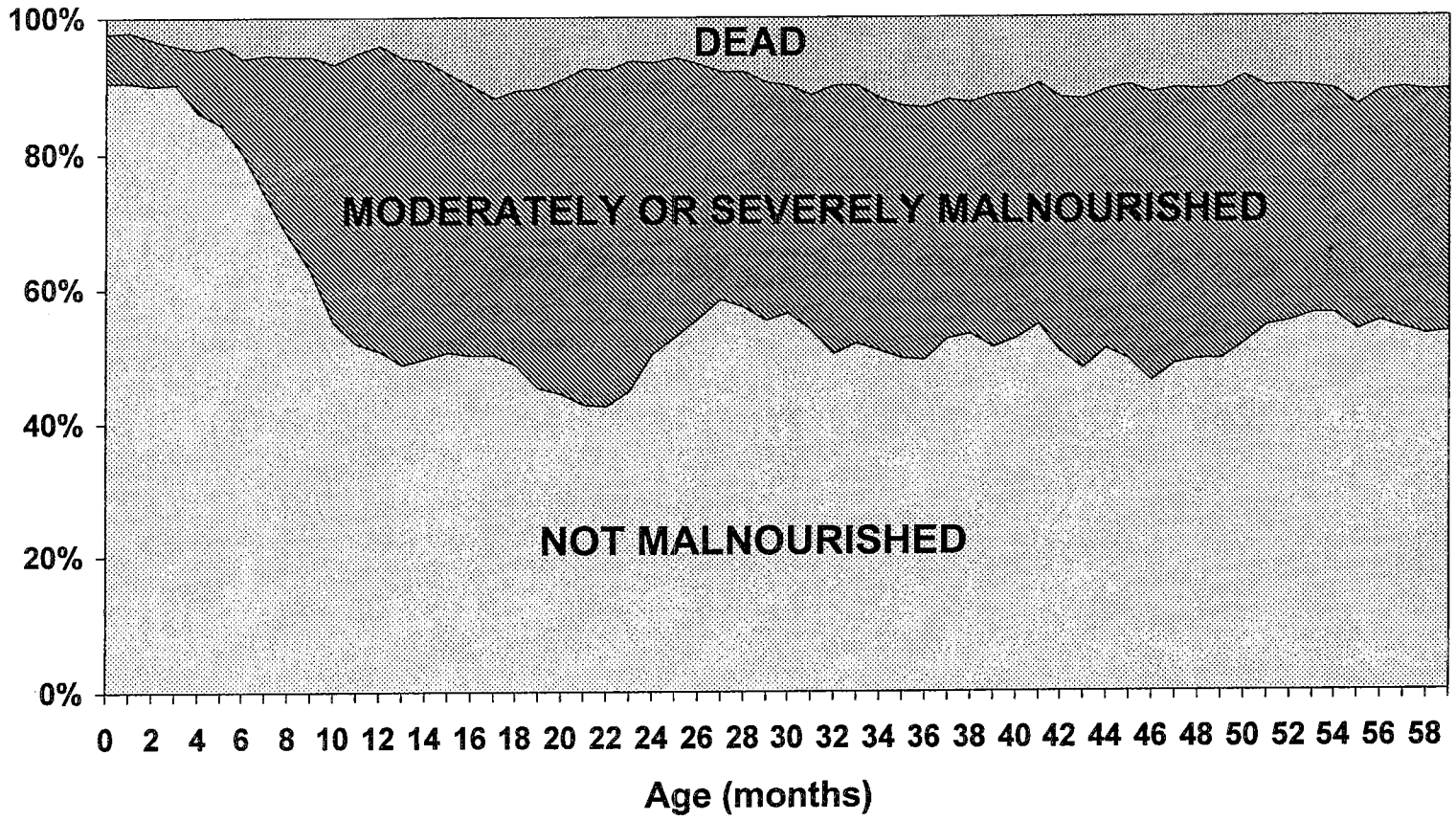
[1] A child with a Z-score below -3 SD on the reference standards is considered severely malnourished, while a child with a Z-score between -3 and -2 SD is considered moderately malnourished.

Figure 17
Survival and Nutritional Status of Children, Ghana



Note: A child with a Z-score below -3 SD on the reference standard is considered severely malnourished while a child with a Z-score between -3 and -2 SD is considered moderately malnourished.

Source: GDHS 1998

Figure 18: Contribution of Malnutrition to Under-five Mortality, Ghana

Malnutrition is an important factor in the death of many young children in Ghana. Formulas developed by Pelletier et al.[1] are used to quantify the contributions of mild, moderate, and severe malnutrition to under-five mortality.

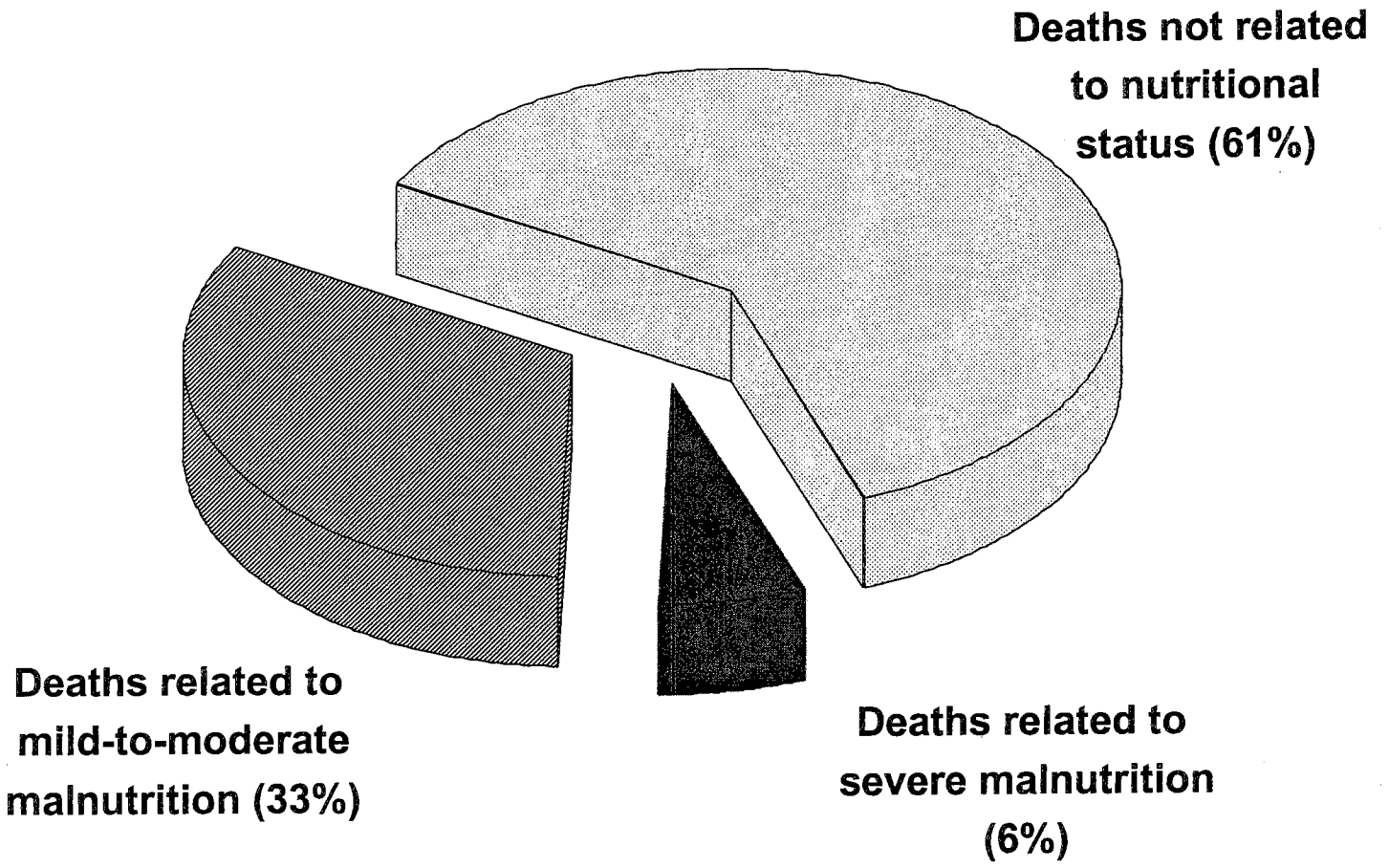
In Ghana:

- **Thirty-nine percent of all deaths that occur before age five are related to malnutrition (severe and mild-to-moderate malnutrition).**

- Because of its extensive prevalence, **mild-to-moderate malnutrition (33 percent) contributes to more deaths than does severe malnutrition (6 percent).** Mild-to-moderate malnutrition is implicated in 85 percent of all deaths associated with malnutrition.

[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.

Figure 18
Contribution of Malnutrition to Under-five Mortality, Ghana



Note: Calculation based on Pelletier et al., 1994.

Source: GDHS 1998

Figure 19: Malnutrition among Mothers of Children under 5 Years by Region, Ghana

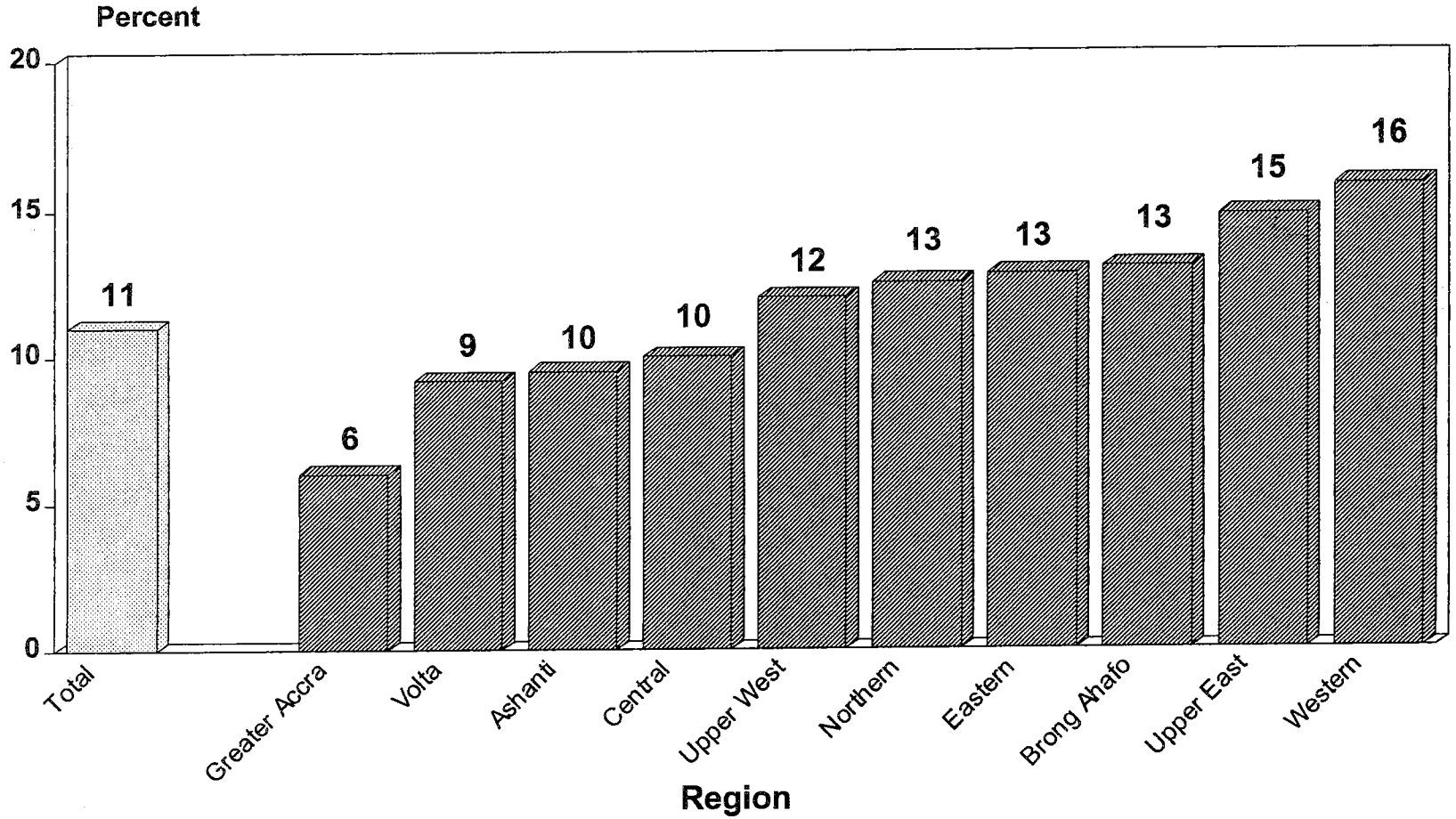
A mother's nutritional status affects her ability to successfully carry, deliver, and care for her children and is also of concern in its own right. There are generally accepted standards for indicators of malnutrition among adult women that can be applied.

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—thus BMI = kg/m^2. When the BMI falls below the suggested cut-off point of 18.5, this indicates chronic energy deficiency or malnutrition for non-pregnant women.

- **Eleven percent of mothers of children under age five in Ghana are malnourished.**

- **The highest prevalence of maternal malnutrition occurs in the Upper East and Western regions (15 percent and 16 percent, respectively). The lowest prevalence of maternal malnutrition (6 percent) occurs in the Greater Accra region.**

Figure 19
Malnutrition among Mothers of Children under 5 Years by Region, Ghana



Note: Maternal malnutrition is the percentage of mothers whose BMI (kg/m^2) is less than 18.5.

Source: GDHS 1998

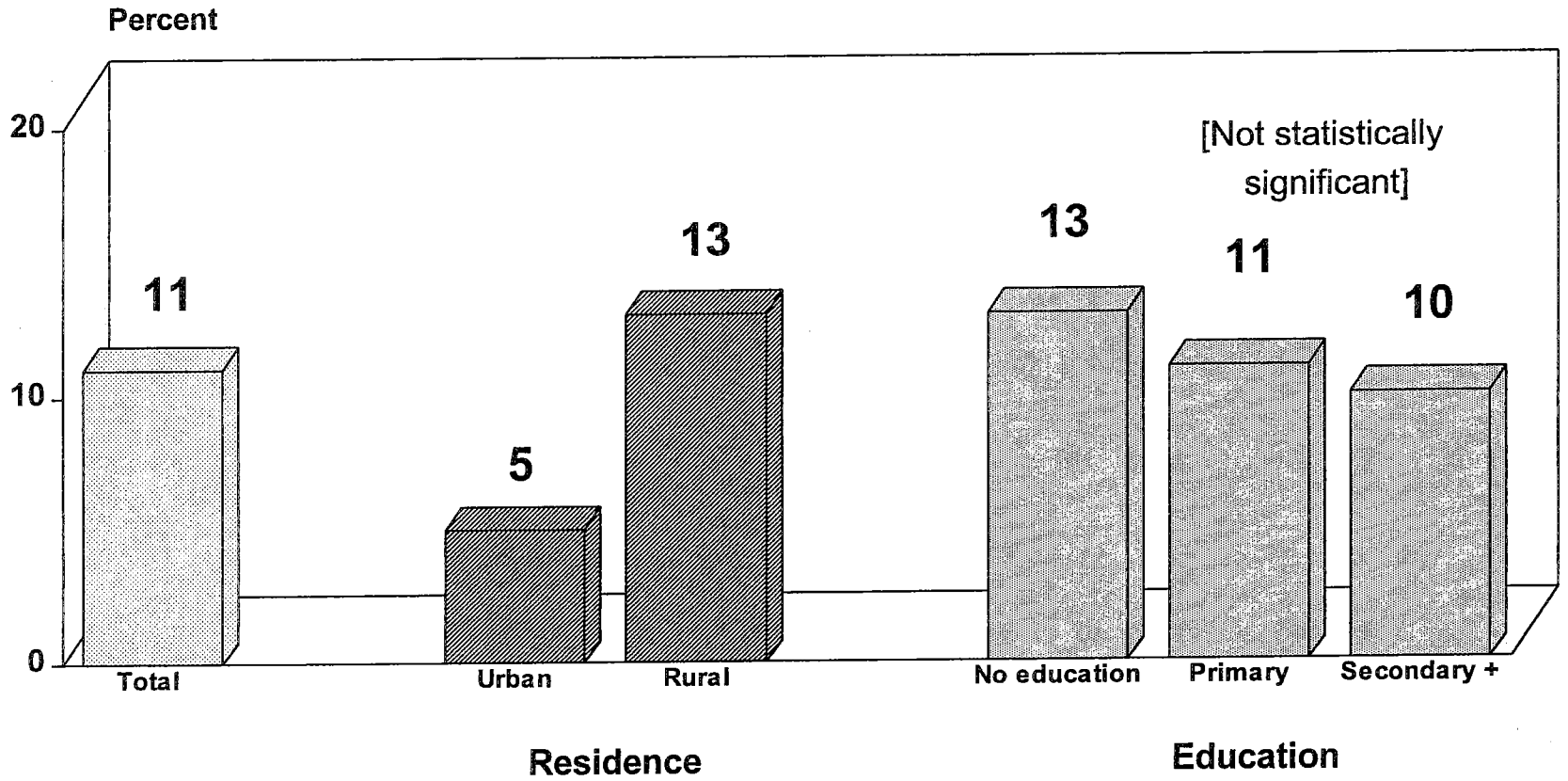
Figure 20: Malnutrition among Mothers of Children under 5 Years by Residence and Education, Ghana

In Ghana:

- **Mothers living in rural areas are more likely to be malnourished:** 13 percent of mothers in rural areas are malnourished, while 5 percent of mothers in urban areas are malnourished.

- **There is no direct relationship between mother's education and maternal malnutrition.**

Figure 20
Malnutrition among Mothers of Children under 5 Years, by Residence and Education, Ghana



Note: Maternal malnutrition levels are based on the percentage of mothers whose BMI (kg/m^2) is less than 18.5.

Source: GDHS 1998

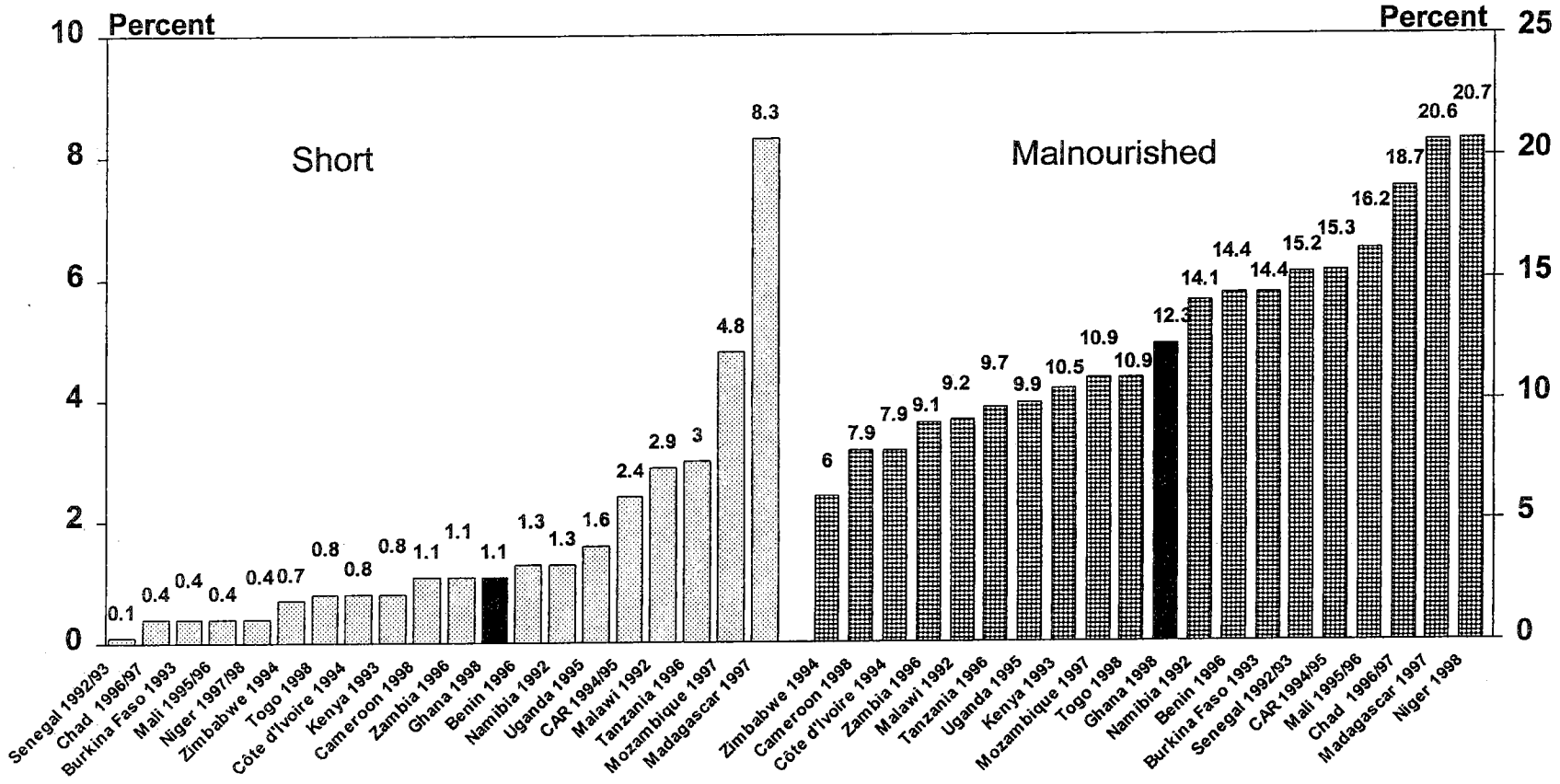
Figure 21: Malnutrition among Mothers of Children under 5 Years in Ghana Compared with Other Sub-Saharan Countries

Malnutrition among mothers is likely to have a major impact on their ability to care for themselves and their children. Women less than 145 centimeters in height are considered too short. Mothers who are too short (a condition largely due to stunting during childhood and adolescence) may have difficulty during childbirth because of the small size of their pelvis. Evidence also suggests there is an association between maternal height and low birth weight. Underweight status in women assessed using the Body Mass Index (BMI) is also presented.

- **Approximately 1.1 percent of mothers of children under five years of age are too short. This level is average among the sub-Saharan countries surveyed.**

- **Approximately 12.3 percent of mothers of children under five years of age are underweight (BMI <18.5). This is in the middle range of the sub-Saharan countries surveyed.**

Figure 21
Malnutrition among Mothers of Children under 5 Years in Ghana Compared with Other Sub-Saharan Countries



Note: *Short* is the percentage of mothers under 145 cm; *malnourished* is the percentage of mothers whose BMI (kg/m^2) is less than 18.5.

Source: DHS 1992-1998

Figure 22: Use of Iodized Salt among Households with Children under 5 Years by Region, Ghana

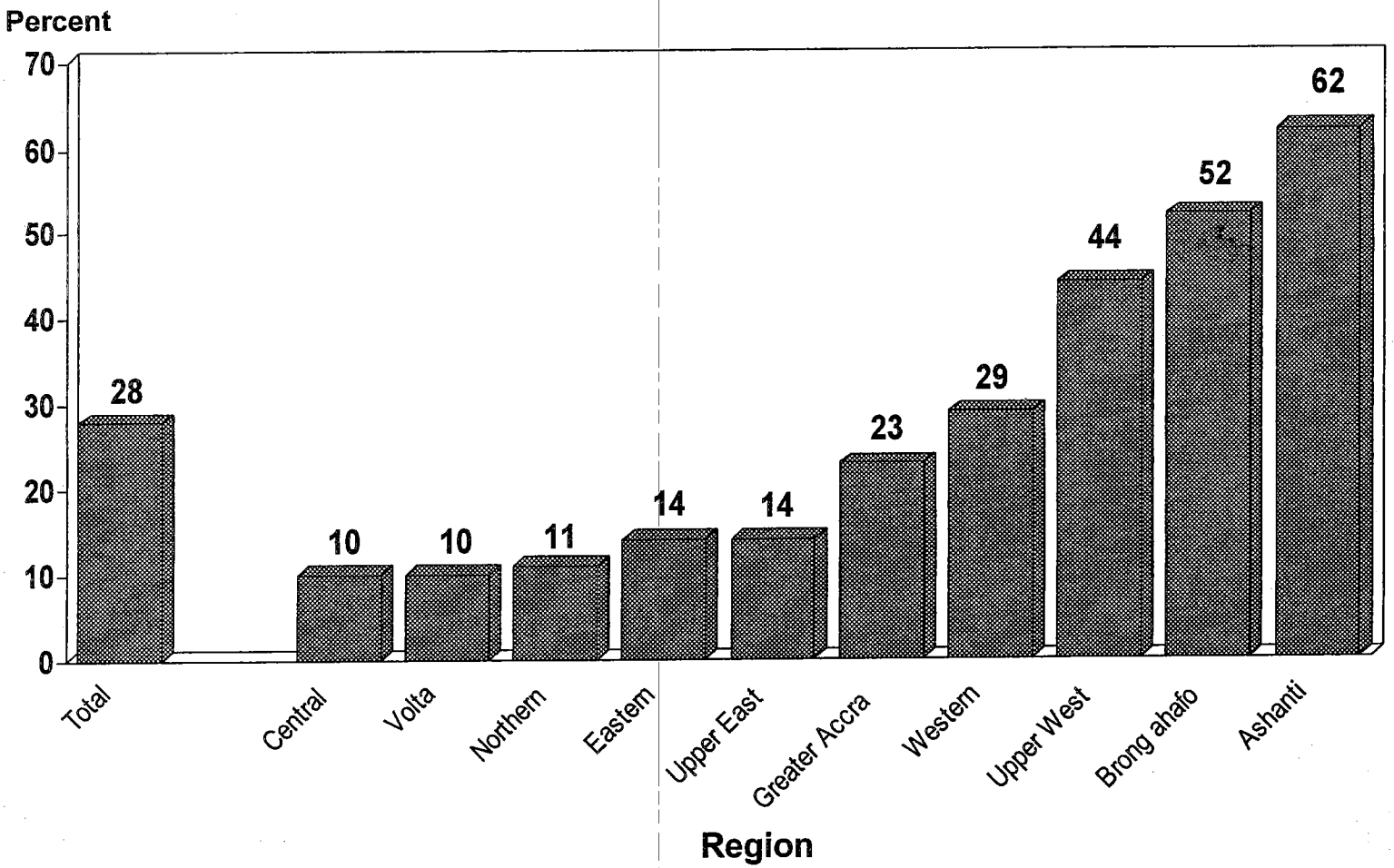
Iodine deficiency is known to cause goiter, cretinism (a severe form of neurological defects), spontaneous abortion, premature birth, infertility, stillbirth, and increased child mortality. One of the most serious consequences to child development is mental retardation caused by iodine deficiency disorders (IDD), putting at stake social investments in health and education. IDD is the single-most common cause of preventable mental retardation and brain damage in the world. It causes goiters and 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 remedy for IDD is relatively simple. A teaspoon of iodine is all a person requires in a lifetime. Since iodine cannot be stored for long periods by the body, tiny amounts are needed regularly. In areas of endemic iodine deficiency, where soil and, therefore, crops and grazing animals do not provide sufficient dietary iodine to the population, food fortification and supplementation have proven highly successful and sustainable interventions. The fortification of salt or oil with iodine is the most common tool to prevent IDD.

A teaspoon of salt was measured in each survey household. With a small test kit, the level of iodization of the salt was assessed. Twenty-five parts per million (PPM) of iodine to salt is considered adequate to eliminate IDD. Iodine does not withstand extended exposure to sunlight. 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 Ghana, 28 percent of households use a type of salt that has an adequate level of iodization to prevent IDD. The Brong Ahafo and Ashanti regions have the highest rates of households with iodized salt (52 percent and 62 percent, respectively). The Central and Volta regions have the lowest percentages of households using iodized salt (10 percent).

Figure 22
Use of Iodized Salt among Households with Children under 5 Years by Region, Ghana



Source: GDHS 1998

Figure 23: Iron and Folate Supplementation among Mothers of Children under 5 Years by Region, Ghana

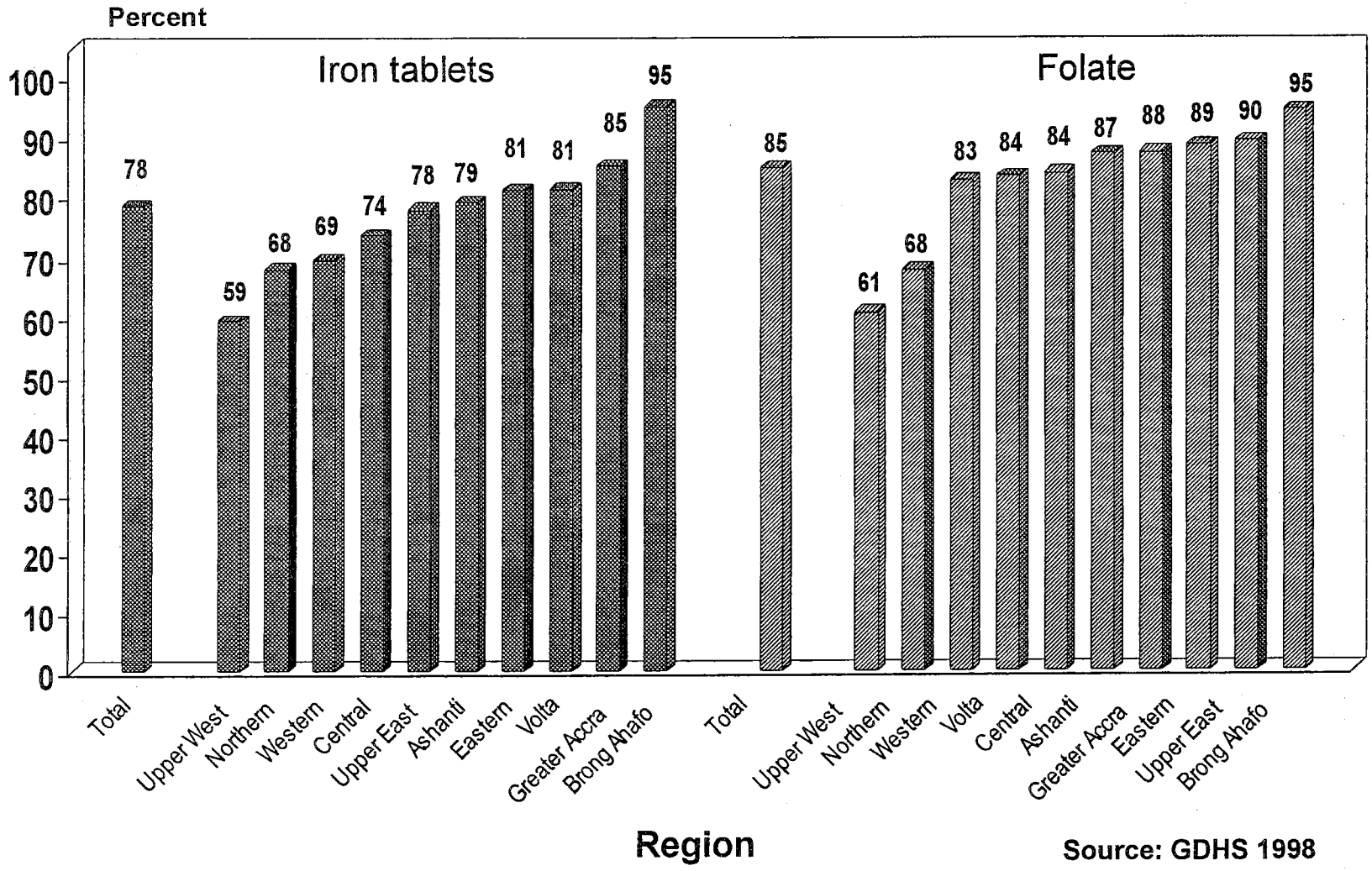
Anemia is caused by inadequate amounts of hemoglobin in the blood. Iron and folate deficiencies are some of the most prevalent conditions related to anemia. Vitamin B12 deficiency, protein deficiency, sickle cell disease, malaria, and infections with intestinal parasites have been linked to anemia.

Iron deficiency is the most common form of nutritional deficiency worldwide. This type of nutritional deficiency develops slowly and does not manifest signs until anemia becomes severe. Diets that are predominantly plant-based often lack sufficient bioavailable iron. Iron is found in meats, poultry, fish, grains, and dark leafy greens (such as spinach). Foods rich in vitamin C increase absorption of iron into the blood. Tea, coffee, and whole grain cereals can inhibit iron absorption. Anemia is commonly found in children 6 to 24 months and in women during pregnancy and lactation. These conditions are related to decreased cognitive development in children, decreased work capacity in adults, and limited chances of child survival. Severe cases are associated with the low birth weight in babies, perinatal mortality, and maternal mortality.

Folic acid supplementation often accompanies efforts to address iron deficiency anemia in women. Folic acid is the synthetic form of folate, which is found naturally in liver, dark leafy green vegetables, nuts, dried beans or peas, citrus fruits, and most berries. Deficiencies of folate are linked to anemia and development of neural tube birth defects in children. When iron deficiency and anemia are prevalent, effective control programs can strongly improve public health conditions. Iron and folate supplementation usually occur during prenatal care. In Ghana, 89 percent of women reported receiving some antenatal care. Of those who received antenatal care, 86 percent received iron tablets and 93 percent received folate. Very few women who did not receive antenatal care received iron or folate supplements (7 percent and 9 percent, respectively).

- **In Ghana, over three-quarters of all pregnant women received some iron supplementation.** The area with the highest percentage of iron supplementation was Brong Ahafo (95 percent). The lowest rates of iron supplementation were found in the Upper West region (59 percent).
- **Eighty-five percent of all pregnant women received folate supplements.** Again, the highest rates of supplementation were in Brong Ahafo and the lowest were in the Upper West region.

Figure 23
Iron and Folate Supplementation among Mothers of Children under 5 Years by Region, Ghana



Source: GDHS 1998

Figure 24: Vitamin A Supplementation among Children under 5 Years by Region, Ghana

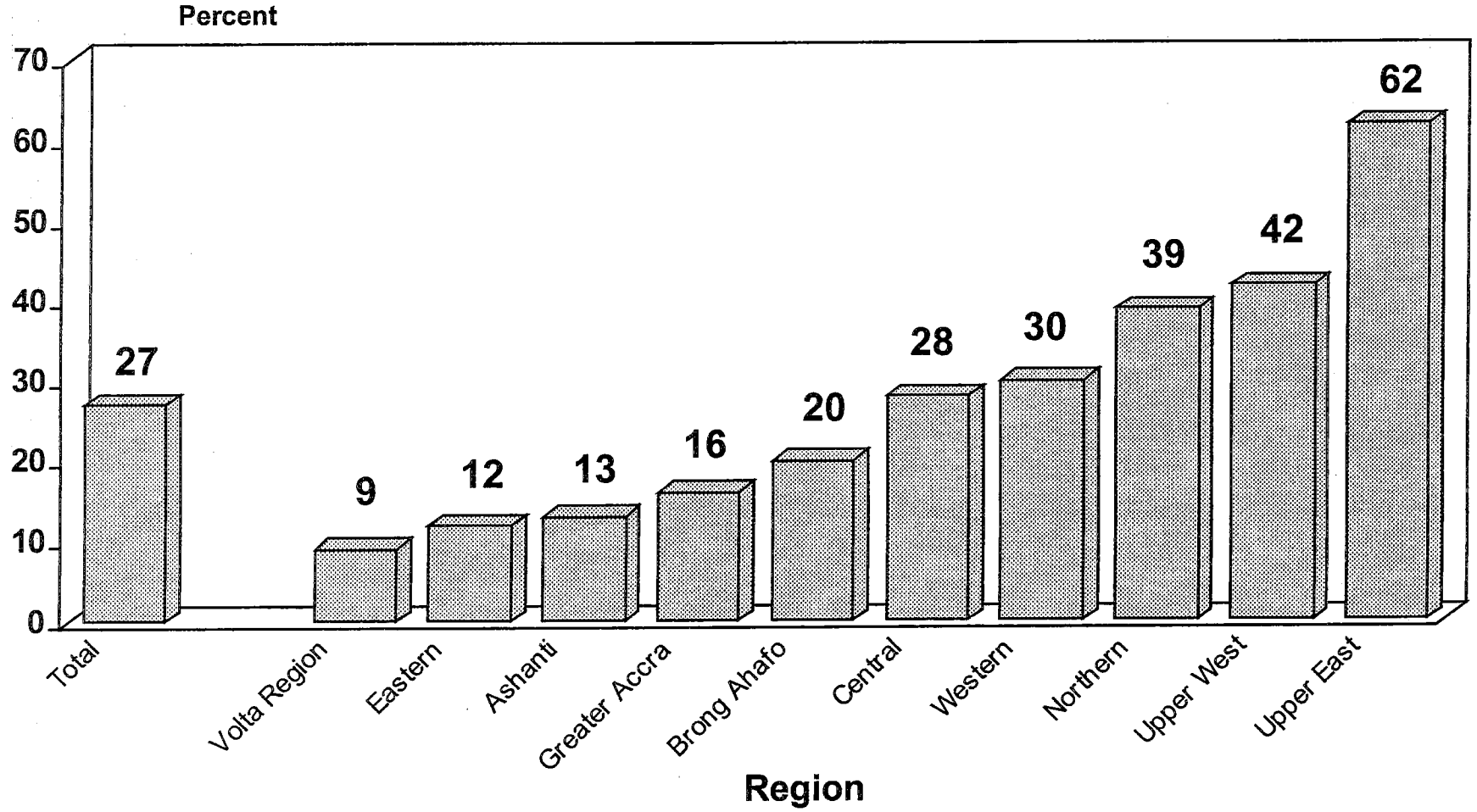
Globally, vitamin A deficiency (VAD) is the leading cause of childhood blindness. The damage to vision (xerophthalmia or night blindness) is only one of the harmful outcomes of VAD. Vitamin A is crucial for growth. Children who are vitamin A deficient have reduced resistance to disease. Such children are also 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.

Vitamin A deficiencies are common in dry environments where fresh fruits and vegetables are not readily available. Children who are malnourished or sick are also at risk for VAD.

Vitamin A is found in breast milk, other milks, liver, eggs, fish, butter, red palm oil, ripe mangoes, ripe 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 adequate amounts of vitamin A for 4 to 6 months. Periodic dosing (every 4 to 6 months) with vitamin A is a rapid, low-cost method of ensuring that children at risk do not develop VAD. National immunization days for polio or measles vaccinations are ideal opportunities for supplying large numbers of children with vitamin A.

- The rate of vitamin A supplementation among children (in the past six months) varies widely in Ghana. **The overall rate of vitamin A supplementation is 27 percent.** The area with the highest rate of vitamin A supplementation among children is the Upper East region (62 percent). The area with the lowest rate is the Volta region (9 percent).

Figure 24
Vitamin A Supplementation among Children under 5 Years by Region, Ghana



Source: GDHS 1998

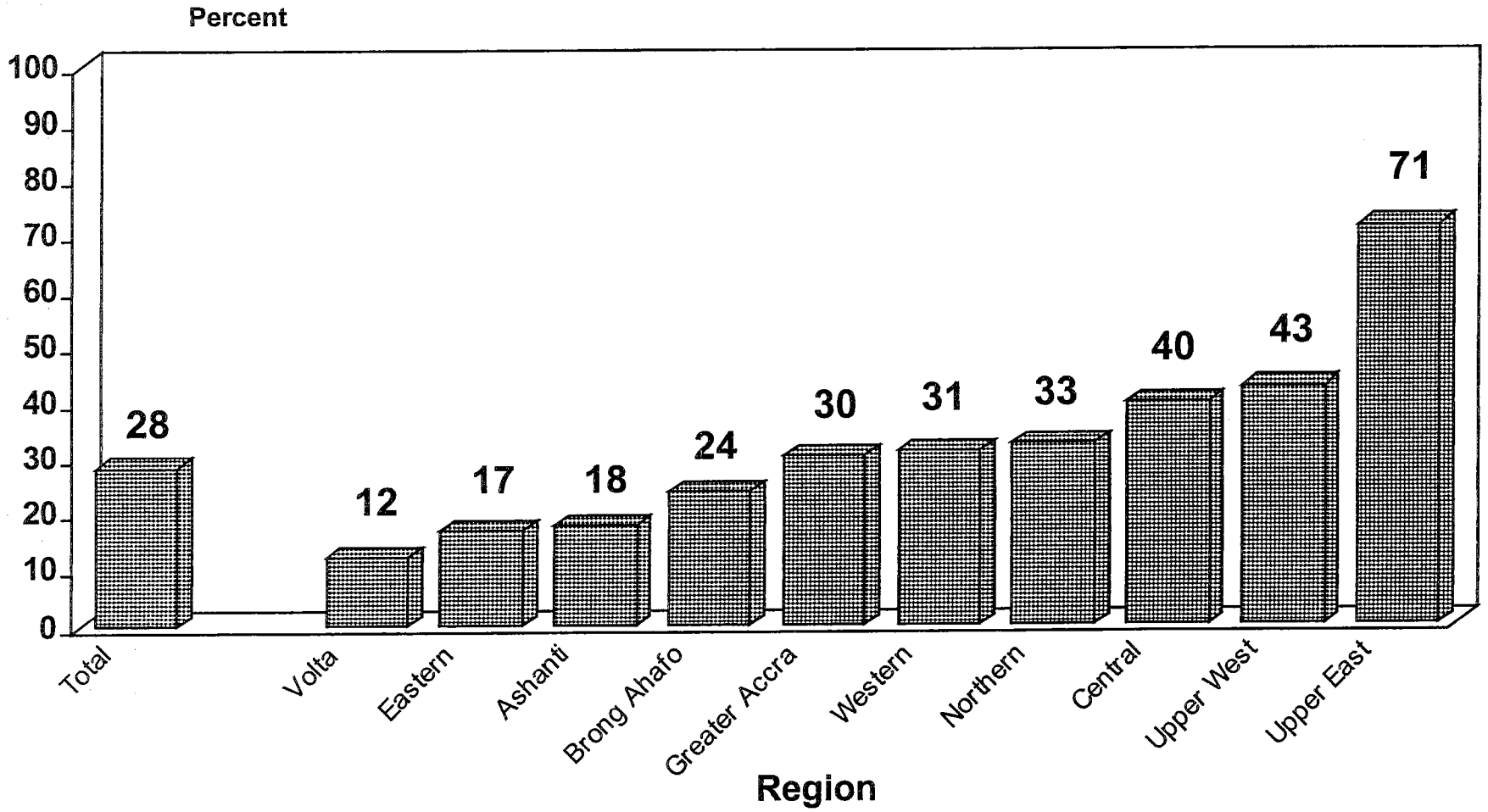
Figure 25: Vitamin A Supplementation among Mothers of Children under 5 Years by Region, Ghana

VAD is also common in pregnant women. Recent studies show that pregnant women who are vitamin A deficient are at a greater risk of dying during or shortly after delivery of the child. Pregnancy and lactation put a strain on women and their vitamin A stores. For women who have just given birth, vitamin A supplementation helps to bring levels of vitamin A storage back to normal, aiding recovery and avoiding illness.

Vitamin A supplementation also benefits children who are breastfed. If mothers have VAD, their children may be born with low stores of vitamin A. Low-birth-weight babies are especially at risk. Children often do not receive adequate amounts of vitamin A from breast milk when mothers are vitamin A deficient. Therefore, supplementation is important for postpartum women (within the first 8 weeks after childbirth). It should be noted that high doses of vitamin A should not be given to pregnant women or mothers more than 8 weeks following childbirth. Proper supplementation improves healing capability and immunity in children and mothers who suffer from VAD. In Ghana, 29 percent of postpartum mothers with antenatal care received vitamin A supplements. Only 13 percent of women without antenatal care received vitamin A supplements.

- Vitamin A supplementation among mothers (within six weeks after delivery) varies by region. **The overall rate of vitamin A supplementation for postpartum women is 28 percent.** The area with the lowest rate of supplementation is the Volta Region (12 percent). The area with the highest rate of supplementation is the Upper East Region (71 percent).

Figure 25
Vitamin A Supplementation among Mothers of Children under 5 Years by Region, Ghana



Source: GDHS 1998

Appendix 1
Stunting, Wasting, and Underweight Rates by Background Characteristics
Ghana 1998

Background characteristic	Stunted	Wasted	Underweight	Background characteristic	Stunted	Wasted	Underweight
Child's age in months				**Region**			
0-5	2.9	3.3	0.5	Western	29.4	9.2	25.6
6-11	8.8	16.1	18.7	Central	26.8	10.3	26.3
12-17	22.3	20.6	37.3	Greater Accra	11.3	5.5	12.2
18-23	31.8	19.7	38.8	Volta	25.1	15.2	24.7
24-29	23.3	8.7	23.9	Eastern	23.6	8.7	22.3
30-35	32.6	6.0	27.8	Ashanti	27.6	9.2	24.8
36-47	37.3	3.2	23.2	Brong-Ahafo	17.8	8.1	24.1
48-54	35.1	4.0	26.6	Northern	39.6	12.7	38.1
				Upper West	34.6	7.1	28.4
				Upper East	35.9	8.2	34.0
n= 3,194	p<0.001	p<0.001	p<0.001	n=3,194	p<0.001	p<0.05	p<0.001
Gender of infant				**Residence**			
Female	23.8	8.7	24.3	Rural	29.7	10.5	27.9
Male	28.1	10.4	25.4	Urban	13.9	6.7	15.5
				Other towns	20.7	3.4	17.2
n= 3,194	p=0.05	NS	NS	n= 3,194	p<0.001	p<0.01	p<0.001
Total	25.9	9.5	24.9		25.9	9.5	24.9

Note : Level of significance is determined using the chi-square test.
NS = not significant

Appendix 2
WHO/CDC/NCHS International Reference Population

The assessment of nutritional status is based on the concept that in a well-nourished population the distributions of children's height and weight at a given age will approximate a normal distribution. This means that about 68 percent of children will have a weight within 1 standard deviation of the mean for children of that age or height, and a height within 1 standard deviation of the mean for children of that age. About 14 percent of children will be between 1 and 2 standard deviations above the mean; these children are considered relatively tall or overweight for their age or relatively fat for their height. Another 14 percent will be between 1 and 2 standard deviations below the mean; these children are considered relatively short or underweight for their age or relatively thin for their height. Of the remainder, 2 percent will be very tall or very overweight for their age or very fat for their height, that is, they are more than 2 standard deviations above the mean. Another 2 percent will fall more than 2 standard deviations below the mean and be considered malnourished. These children are very short (stunted) or very underweight for their age or very thin (wasted) for their height.

For comparative purposes nutritional status has been determined using the International Reference Population defined by the United States National Center for Health Statistics (NCHS standard) as recommended by the World Health Organization and the Centers for Disease Control.

Appendix 2
WHO/CDC/NCHS Nutrition Reference Standard
Normal Distribution