
Nutrition of Infants And Young Children In Nigeria

AFRICA NUTRITION CHARTBOOKS



U.S. Agency for International Development
AFR/ARTS and R&D/N



Macro International Inc.



Food Security and Nutrition Monitoring Project

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NUTRITION OF INFANTS AND YOUNG CHILDREN IN NIGERIA

Findings from the 1990 Nigeria DHS Survey

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Introduction

Undernutrition¹ is one of the most important health and welfare problems among infants and young children in Nigeria. It is a result of both inadequate intake of food and poor environmental sanitation. An inadequate intake of food is a consequence of improper feeding practices and/or insufficient food at the household level. Improper feeding practices include both the quality and quantity of food offered to young children as well as the timing of their introduction. Poor sanitation puts young children at risk of increased illness, in particular diarrhoeal disease, which adversely affects a child's nutritional status. Both inadequate food intake and poor environmental sanitation reflect underlying social and economic conditions.

Undernutrition has significant health and economic consequences. The most serious of these is the increased risk of dying. Other outcomes include 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 undernutrition can be a reduction in worker productivity and increased absenteeism in the workplace, both of which may reduce individual and national lifetime earning potential. Furthermore, undernutrition can result in adverse pregnancy outcomes.

The Nigerian data presented here are from the 1990 Nigeria Demographic and Health Survey (NDHS), a nationally representative survey conducted by the Nigerian Federal Office of Statistics with technical assistance from Macro International Inc. The data presented for other sub-Saharan countries are from Demographic and Health Surveys (DHS) carried out in those countries.

¹ The technical definitions for *undernutrition* as defined by the National Center for Health Statistics (NCHS), the Centers for Disease Control (CDC), and the World Health Organization (WHO) are presented in the Appendix.

Undernutrition among Children under 5 Years, Nigeria

In Nigeria:

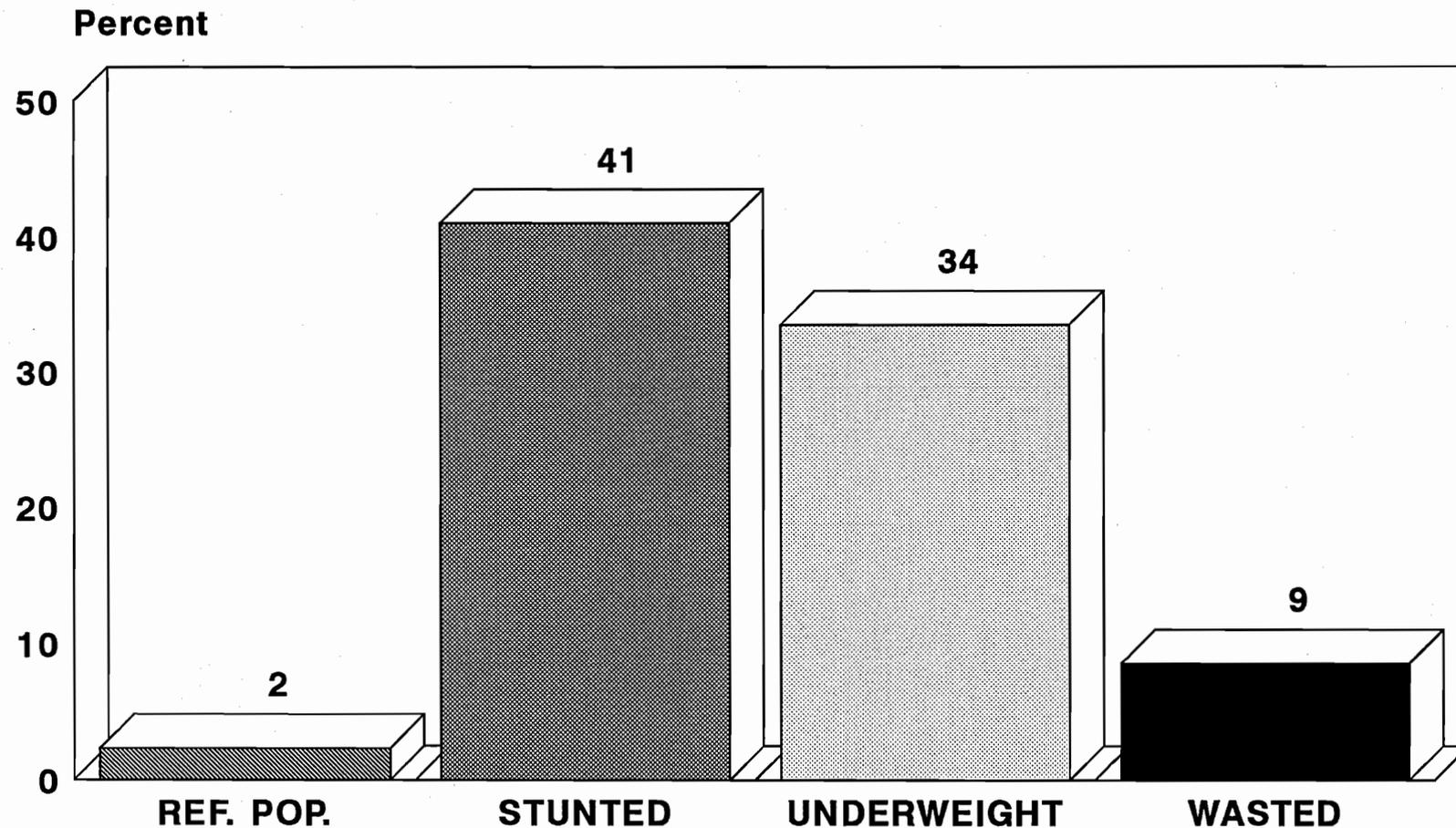
- **Nearly 1 in 2 children under 5 years old is chronically undernourished.** In other words, they are too short for their age or *stunted*.¹ The proportion of children who are stunted is about **18 times** the level expected in a healthy well-nourished population.
- **One in three children is *underweight*² for his or her age.** This is about **15 times** the level of a healthy, well-nourished population.
- **Acute undernutrition, manifested by *wasting*³, results in a child being too thin for his or her height and affects nearly 1 in 10 children.** This is about **4 times** the level expected in a healthy, well-nourished population.

¹ A *stunted* child has a height-for-age Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. Chronic undernutrition is the result of an inadequate intake of food over a period of time and may also be affected by chronic illness.

² 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 undernutrition.

³ A *wasted* child has a weight-for-height Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. Acute undernutrition is the result of a recent failure to receive adequate nutrition and may be affected by acute illness, in particular diarrhoea.

Figure 1 Undernutrition among Children under 5 Years, Nigeria



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

NDHS 1990

Undernutrition among Children Age 3 to 36 Months¹ in Nigeria and other sub-Saharan Countries, DHS 1986-1991

Among the sub-Saharan countries surveyed:

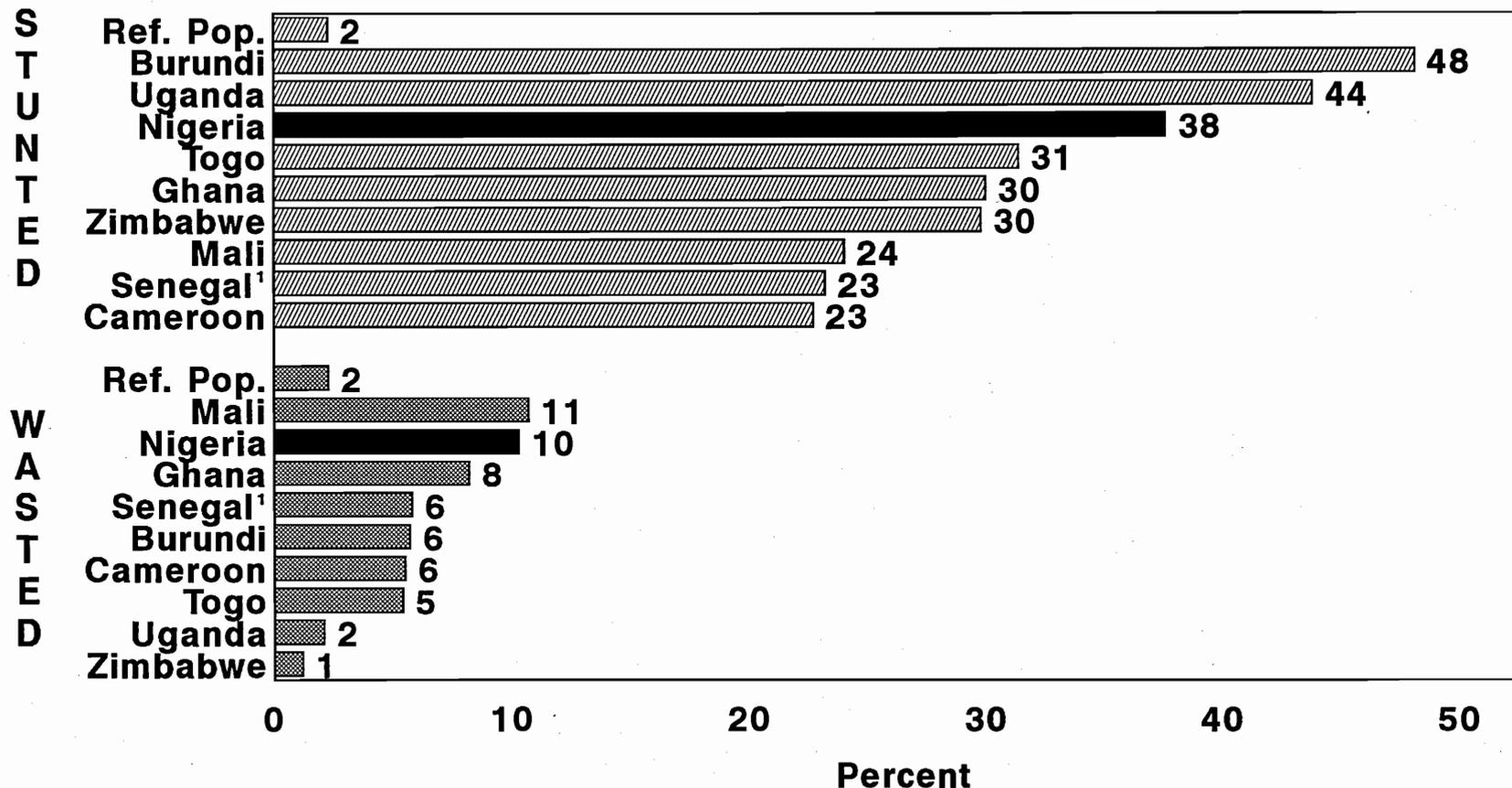
- **Nigeria is third highest in the proportion of children who are stunted.** The level of chronic undernutrition in Nigeria is exceeded only by that in Burundi and Uganda, countries which have endured prolonged periods of instability and have restricted access to health care and food.
- **The level of acute undernutrition in Nigeria is second only to that of Mali.²**

¹ Unlike Nigeria, in some countries data were collected only for children aged 3 to 36 months. For comparative purposes data for this age range are presented.

² It is important to note that these data come from surveys carried out in different seasons between 1986 and 1991, which could affect the comparability of the results.

Figure 2

Undernutrition among Children Age 3 to 36 Months in Nigeria and other sub-Saharan Countries, DHS 1986-1991



Note: Stunted reflects chronic undernutrition
wasted reflects acute undernutrition.

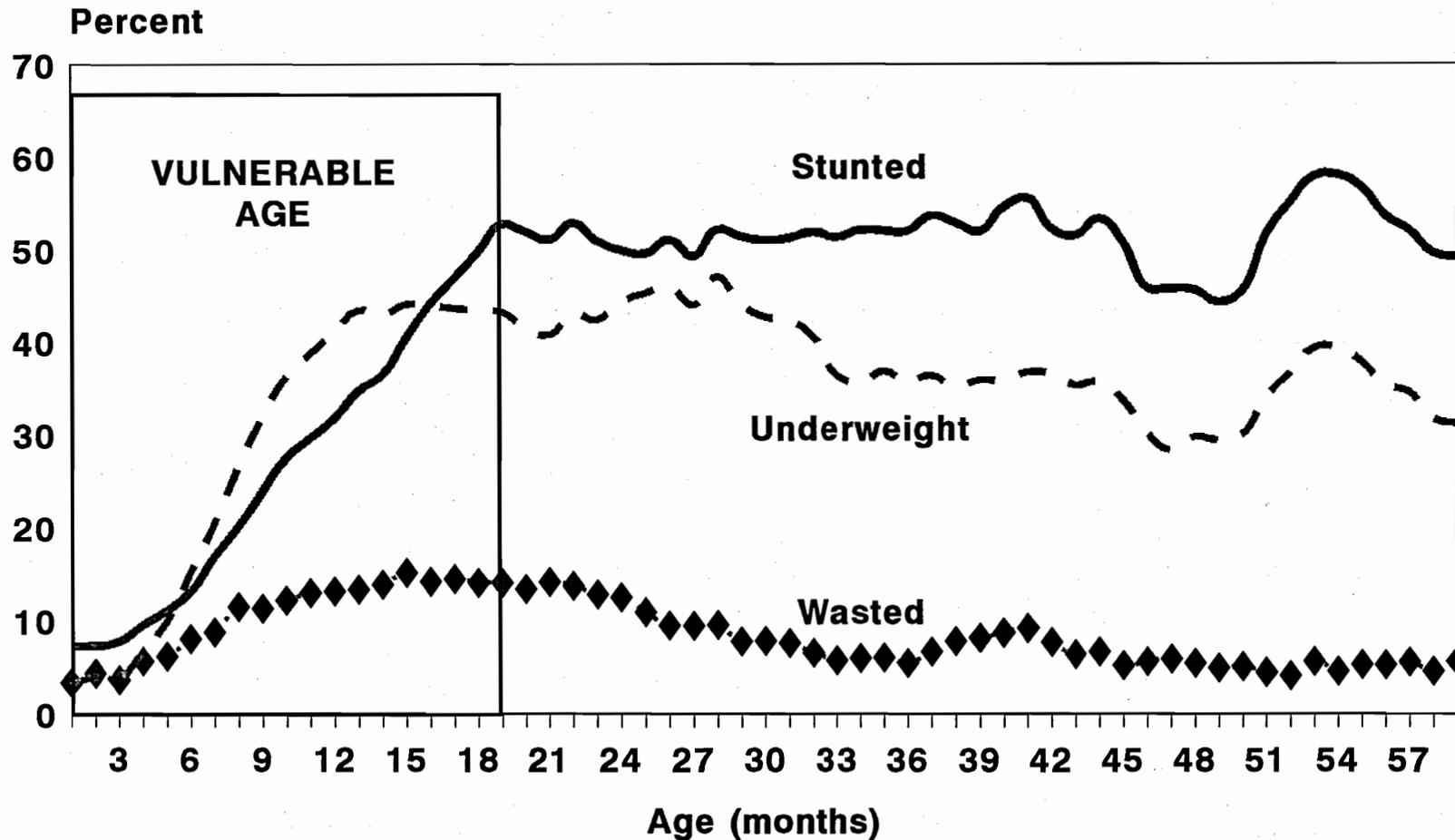
¹Infants and children age 6 to 36 months.

Undernutrition by Age, Nigeria

In Nigeria, the time between birth and 19 months of age is the vulnerable age:

- **Stunting**, indicating chronic undernutrition, begins very early in life and increases until, by 18 months of age, it affects about **one in two** children.
- The proportion of children **underweight** increases to **four in ten**.
- **Wasting**, indicating acute undernutrition, peaks at 15 to 18 months of age and affects **one in six** children.
- This **age pattern of undernutrition** occurs in both rural and urban areas and all four Ministry of Health zones.

Figure 3 Undernutrition by Age, Nigeria



Note: Stunting reflects chronic undernutrition; wasting reflects acute undernutrition; Underweight reflects either chronic or acute undernutrition.

NDHS 1990

Feeding Practices for Infants under 4 Months, Nigeria

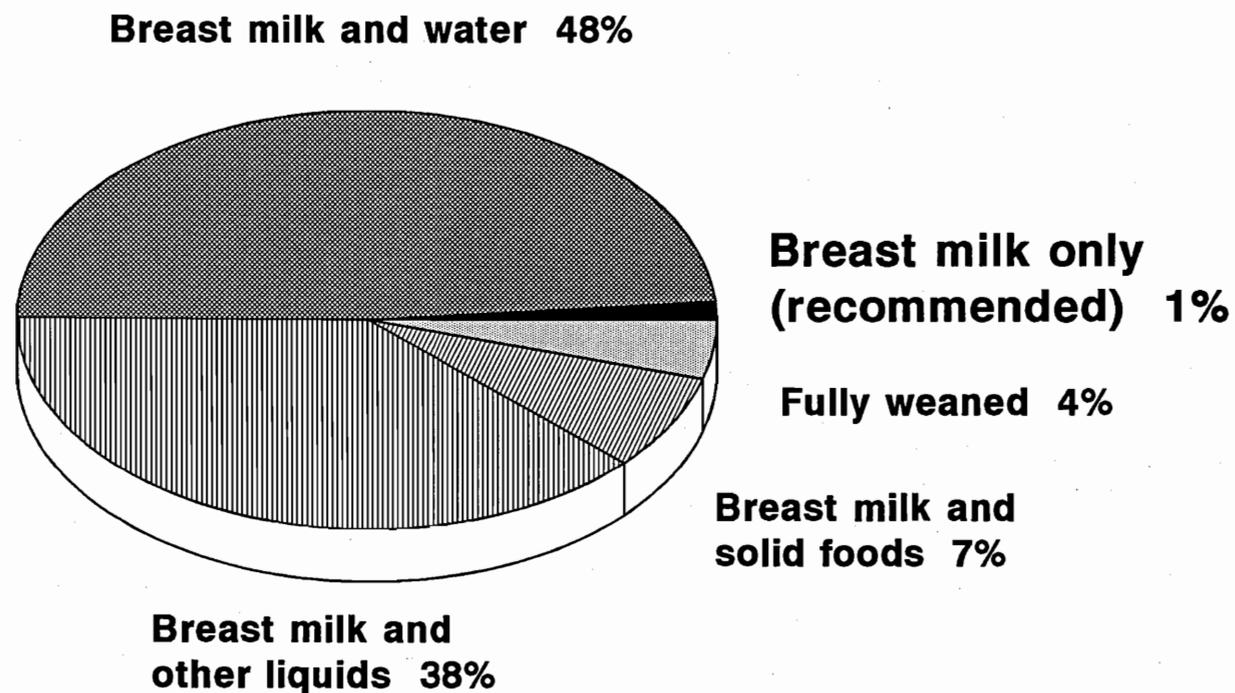
Feeding patterns, in addition to diarrhoeal disease, are important determinants of undernutrition.¹ The World Health Organization (WHO) recommends that all infants be exclusively breastfed from birth to 4 to 6 months of age. In other words they should be fed only breast milk.

In Nigeria, the introduction of liquids, such as water, sugared water, teas, artificial formulae, and solid foods takes place far too early in life. 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 intake of liquids and solid foods results in lower breast-milk intake which, in turn, reduces the mother's supply of milk because breast-milk production is determined, in part, by both the frequency and intensity of suckling. Third, feeding young infants liquids and solid foods increases their exposure to pathogens and consequently puts them at greater risk of diarrhoeal disease.

- **Only one in one hundred Nigerian children under the age of 4 months is exclusively breastfed, as recommended by WHO.**
- **One-half of the infants under 4 months are given some form of supplemental feeding, contrary to recommendations.**
- **To a large extent, the failure to exclusively breastfeed for the first 4 to 6 months of life accounts for the rapid increase in undernutrition among young infants.**
- **Nearly two-thirds of Nigerian mothers with children under the age of 5 years work outside the home. This fact needs to be taken into consideration in efforts to increase the duration of exclusive breastfeeding and in recommendations for appropriate alternatives for infants who can not be exclusively breastfed.**

¹Information on feeding practices is based on the 24 hours preceding the survey.

Figure 4 Feeding Practices for Infants under 4 Months, Nigeria



WHO recommends that all infants be breastfed exclusively until they are 4 to 6 months old.

NDHS 1990

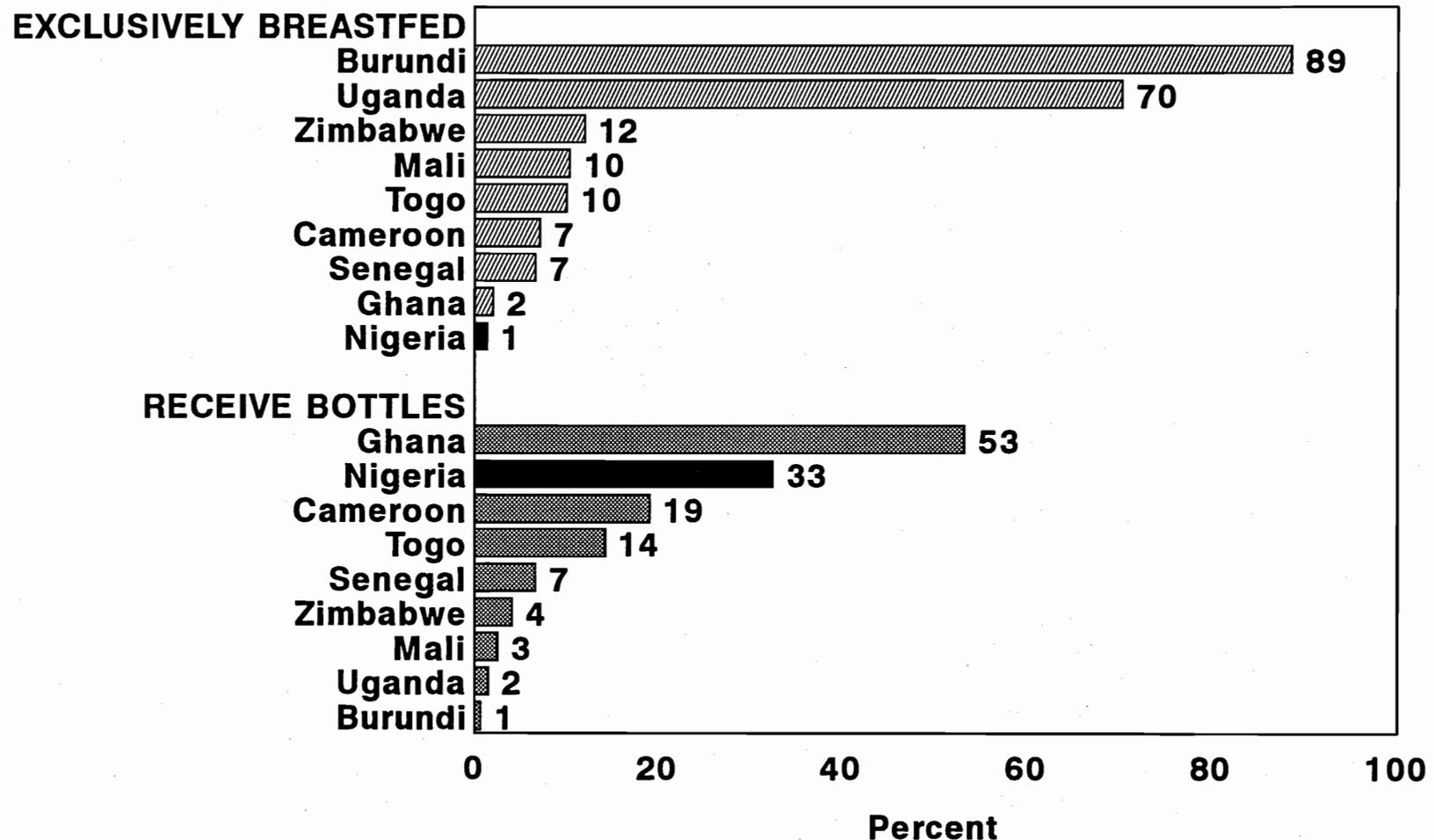
Infants under 4 Months Who Are Exclusively Breastfed and Those Who Receive Supplemental Bottles, in Nigeria and other sub-Saharan Countries, DHS 1986-1991

Not breastfeeding exclusively and introducing liquids and solid foods prematurely both increase the risk of diarrhoeal disease, a highly important cause of mortality in Africa.

- **In the surveyed sub-Saharan countries, including Nigeria, very few mothers of infants under four months follow the recommended practice of exclusive breastfeeding. Indeed, Nigeria and Ghana have the lowest levels of exclusive breastfeeding. In contrast, almost all infants are exclusively breastfed in Burundi.**
- **Bottle feeding, a non-recommended practice, is used by one in three Nigerian mothers of infants under four months. Only Ghana has a higher rate of bottle use among the countries surveyed.**

Figure 5

Infants under 4 Months Who Are Exclusively Breastfed and Those Who Receive Supplemental Bottles, in Nigeria and other sub-Saharan Countries, DHS 1986-1991



Note: WHO recommends that all infants should receive nothing but breast milk until 4 to 6 months of age.

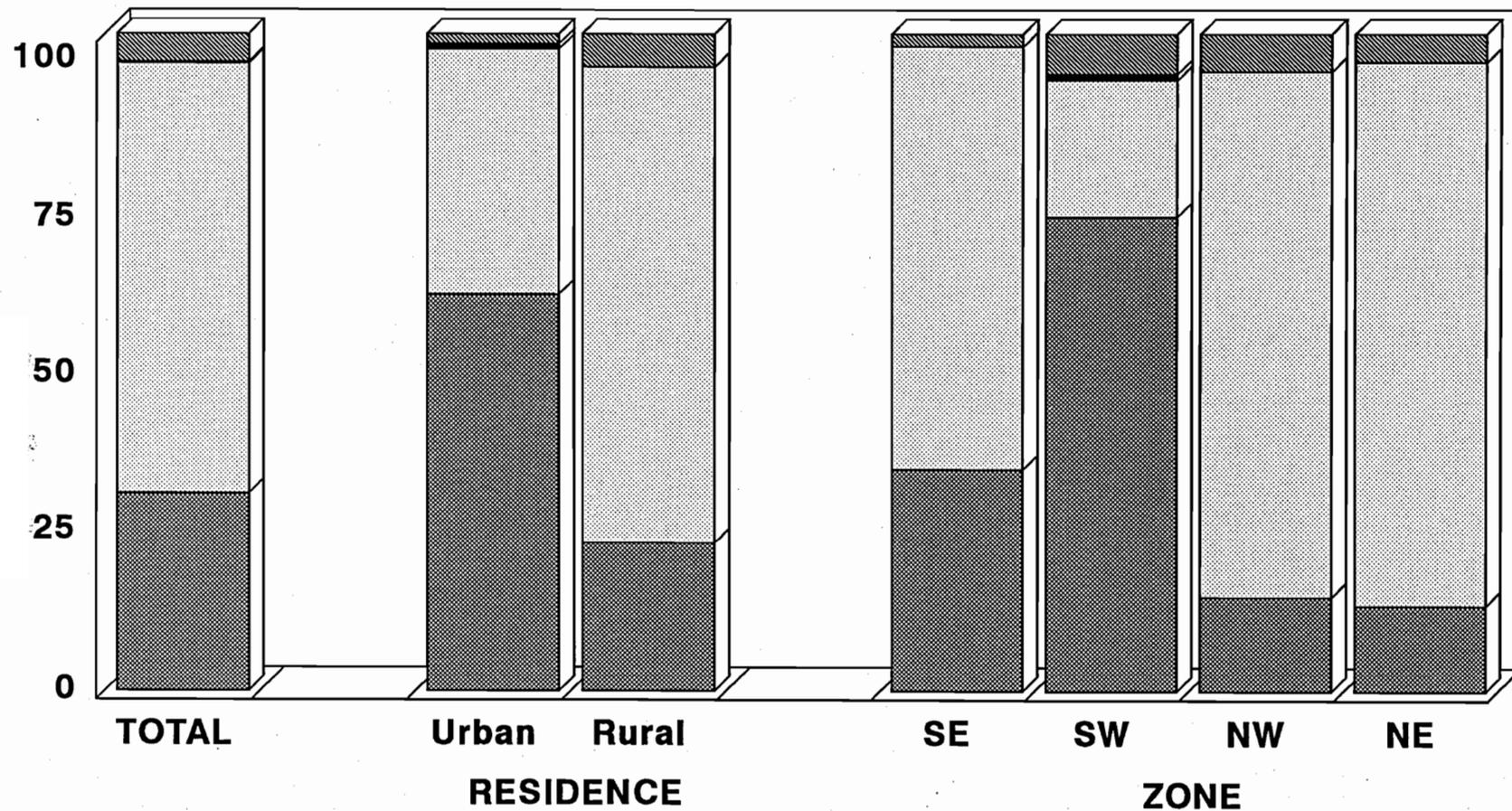
¹Information on feeding practices is based on 24 hours preceding the survey.

Residential and Zonal Differences in Feeding among Infants under 6 Months, Nigeria

Improper use of bottles can lead to infant illness due to exposure to contaminants and thus disease pathogens. An equally important risk is that bottle use can reduce the maternal milk supply because the suckling stimulus of the infant, which promotes breast milk production, is reduced.

- **One in three breastfed Nigerian infants under 6 months of age is also given a bottle.**
- **Bottle use is almost three times more common in urban than in rural areas.**
- **In the South West zone nearly 75 percent receive a bottle in addition to breast milk.**
- **In the northern zones less than 15 percent of infants receive a bottle in addition to breast milk.**

Figure 6
Residential and Zonal Differences in Feeding
among Infants under 6 Months, Nigeria



Breast & bottle
 Breast, no bottle
 Bottle, no breast
 Neither

Feeding Practices for Infants Age 6 to 9 Months, Nigeria

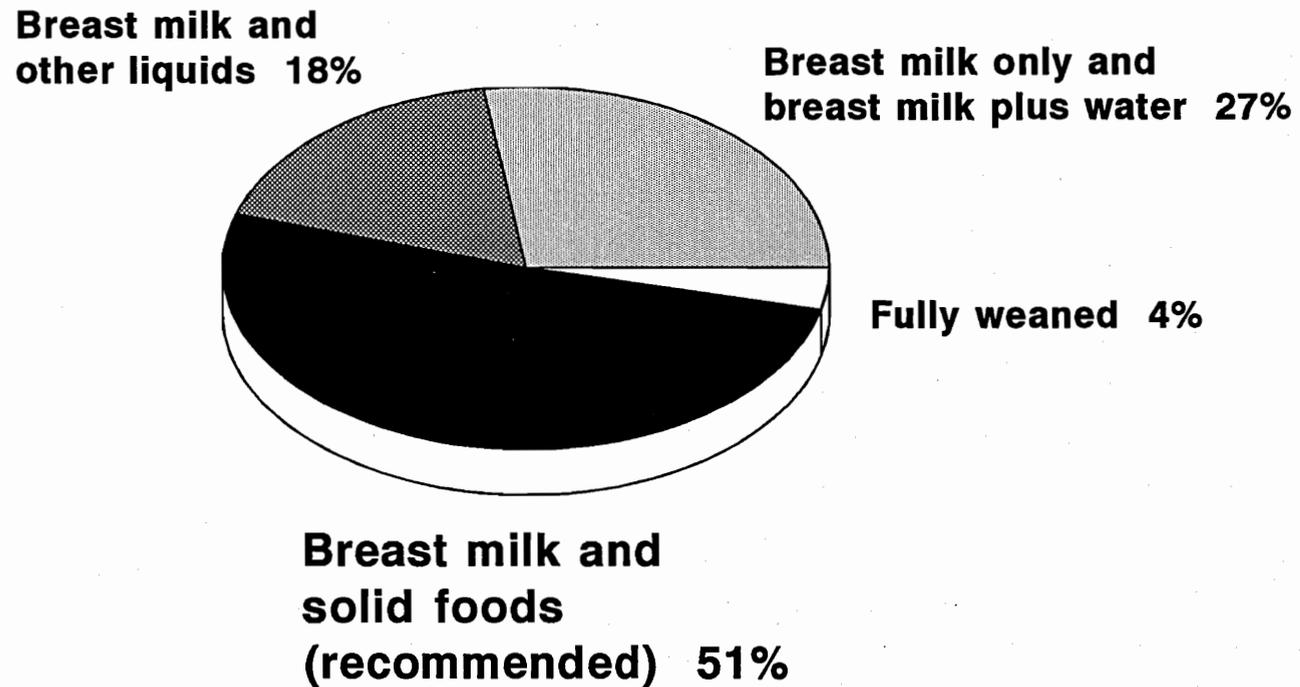
The World Health Organization also recommends that solid foods be introduced to infants between the ages of 4 to 6 months because breast milk, on its own, is no longer sufficient to maintain optimal child growth. Thus, all infants over 6 months of age should be receiving solid foods along with breast milk.

- **Only one-half of Nigerian infants age 6 to 9 months are fed solid food** in addition to breast milk. In other words, only one-half of the infants between the ages of 6 and 9 months are fed according to the recommended practice.
- **Just over 25 percent of infants age 6 to 9 months are still fully breastfed**, nearly 20 percent are fed liquids in addition to breast milk, and less than 5 percent are fully weaned from the breast.

Research shows that some Nigerian mothers believe that children are not developmentally ready to receive solid food until they are over one year old.¹ Furthermore, the nutrient density of traditional paps is not adequate to support optimal growth. The delayed introduction of solid foods to complement breast milk, compounded by the poor nutrient quality of the solid foods traditionally used, predisposes infants to undernutrition. This is clearly reflected in the rapid increase in undernutrition among this age group. Public health measures are needed to ensure that infants and children are fed nutritious weaning foods, at the appropriate age, in order to avoid both the rapid increase and the high levels of undernutrition among children under 24 months of age. However, efforts to improve the nutritional quality of traditional weaning foods need to take into account both the economic and time constraints of most Nigerian mothers.

¹ (a) Bently, M.E. et al. 1991. Development of a nutritionally adequate and culturally appropriate weaning food in Kwara State, Nigeria: An interdisciplinary approach. *Soc. Sci. Med.*, 33: 1103-1111. (b) Dickin, K.L. et al. 1990. Effect of diarrhoea on dietary intake by infants and young children in rural villages of Kwara State, Nigeria. *Eur. J. Clin. Nut.*, 44: 307-317. (c) Oni, G.A. et al. 1990. Feeding practices and prevalence of hand-feeding of infants and young children in Kwara State, Nigeria. *Ecol. Food and Nut.*, 25: 1-11.

Figure 7 Feeding Practices for Infants Age 6 to 9 Months, Nigeria



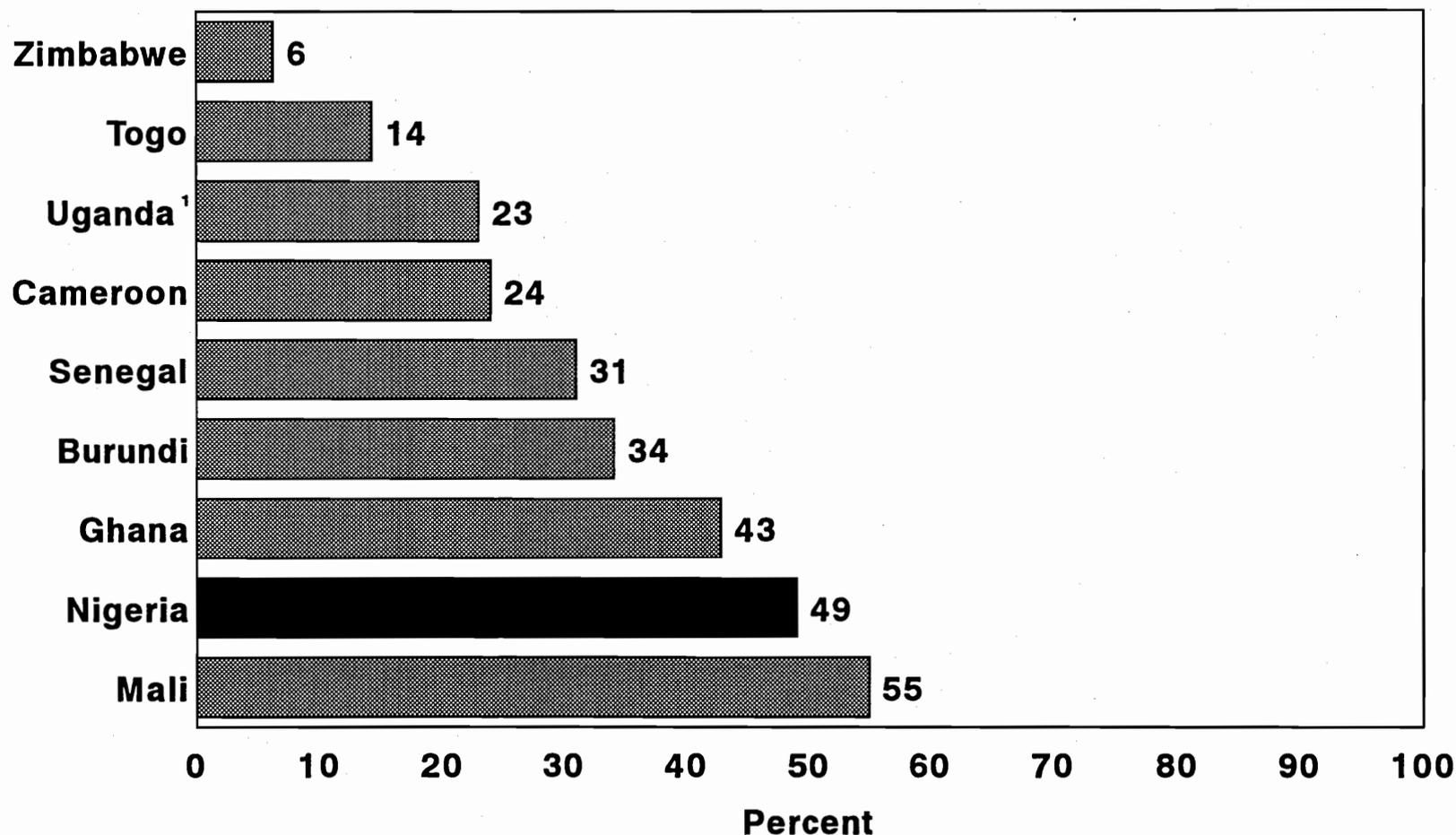
Note: WHO recommends that by the age of 6 months all infants should receive solid foods in addition to breast milk.

NDHS 1990

Infants 6 to 9 Months Not Receiving Food in Addition to Breast Milk in Nigeria and other sub-Saharan Countries, DHS 1986-1991

- **In Nigeria one-half of the infants age 6 to 9 months are not fed according to the World Health Organization recommendations. Indeed, Nigeria and Mali have the smallest proportion of infants that receive both breast milk and solid foods among the sub-Saharan countries studied.**

Figure 8
Infants 6 to 9 Months Not Receiving
Food in Addition to Breast Milk in Nigeria
and other sub-Saharan Countries, DHS 1986-1991



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

¹Includes liquids.

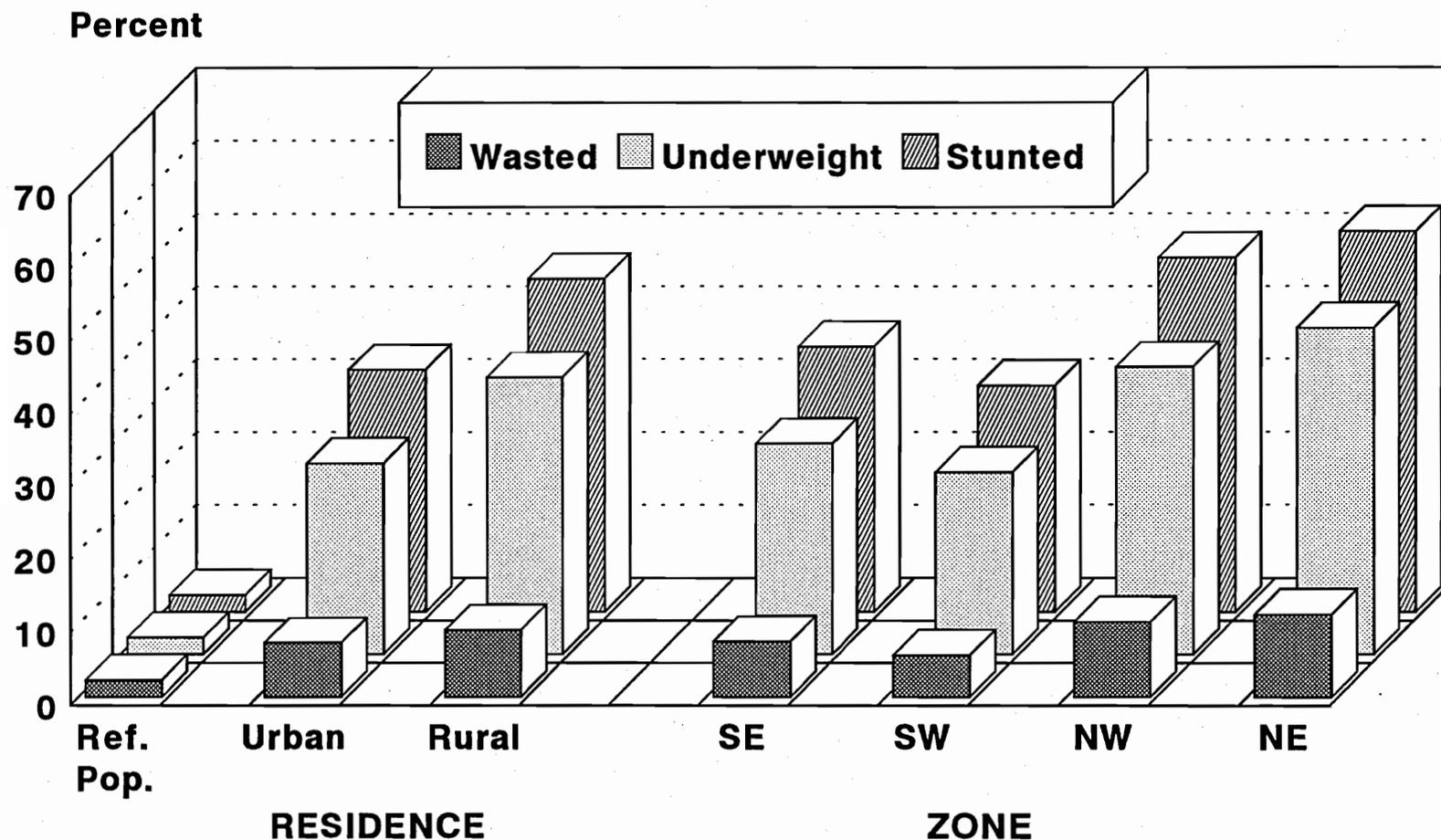
Undernutrition among Children under 5 Years by Residence and Zone, Nigeria

In Nigeria:

- **Stunting occurs among almost one in two children under five years old in rural areas, where over 75 percent of the Nigerian population lives.**
- **One in three urban children is stunted.**
- **One in two children in the North West and North East zones is stunted versus one in three in the southern zones.**
- **Wasting and underweight are prevalent in all areas of Nigeria, but much more so in the northern zones and rural areas.**

Figure 9

Undernutrition among Children under 5 Years by Residence and Zone, Nigeria



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

NDHS 1990

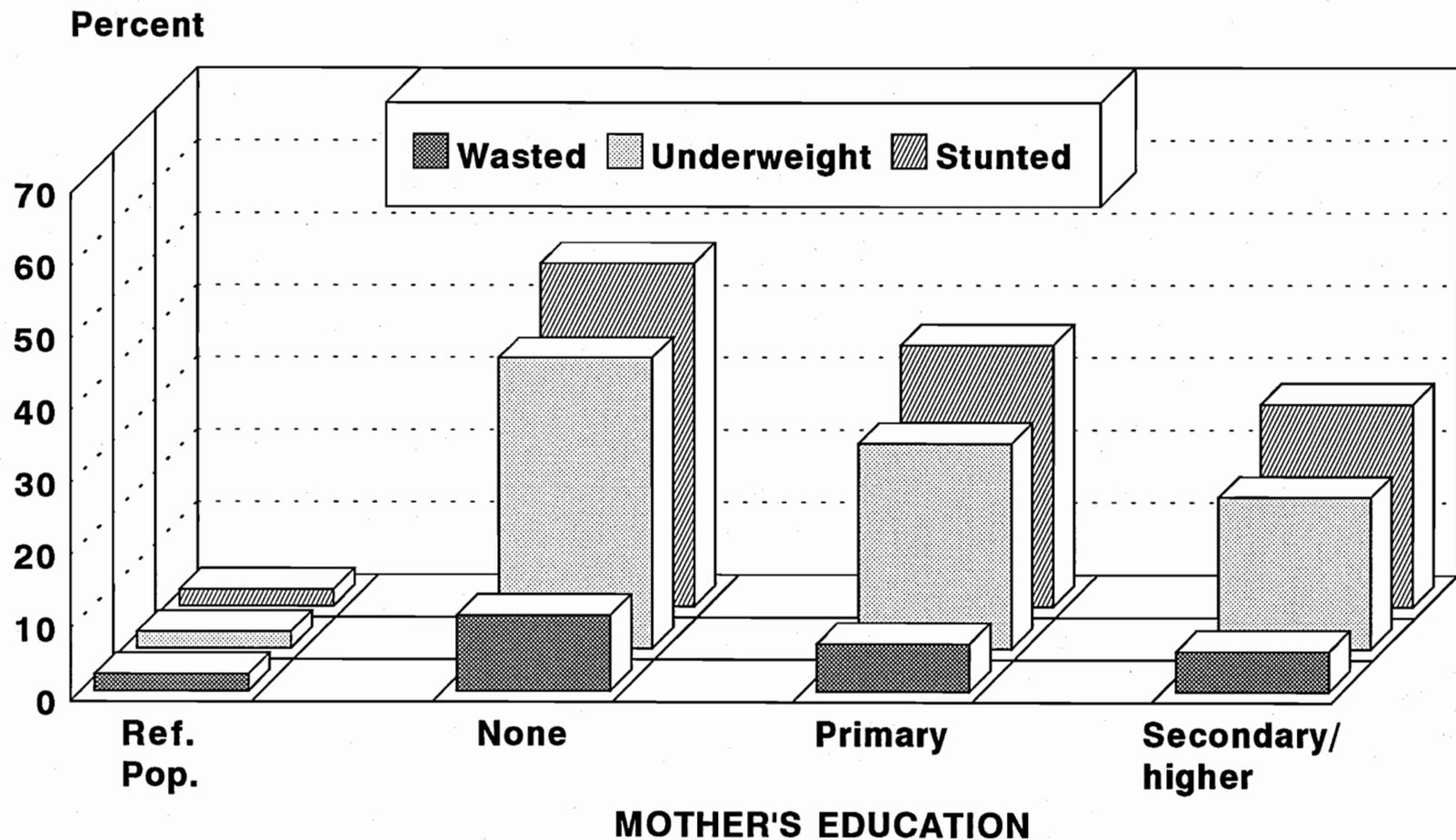
Undernutrition among Children under 5 Years by Mother's Education, Nigeria

Maternal education is related to both a knowledge of good child-care practices and household wealth. More than one-half of Nigerian mothers have never attended school but there are large regional variations. Over 80 percent of mothers in both the North East and North West zones have never been to school, whereas about 30 percent of mothers in the South West and over 40 percent of mothers in the South East zones have never been to school.

- **Undernutrition is twice as high among children of mothers with no education than among children of mothers with secondary or higher education.**
- **More than one in four children of mothers with secondary or higher education is stunted, whereas almost one in two children of mothers with no education is stunted.**

Undernutrition is high even among the children of educated women, suggesting that traditional infant and child feeding practices are inadequate for good nutrition and may have serious adverse effects on children's growth.

Figure 10
Undernutrition among Children under 5 Years by
Mother's Education, Nigeria



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

Undernutrition among Children under 5 Years by Source of Water and Type of Toilet, Nigeria

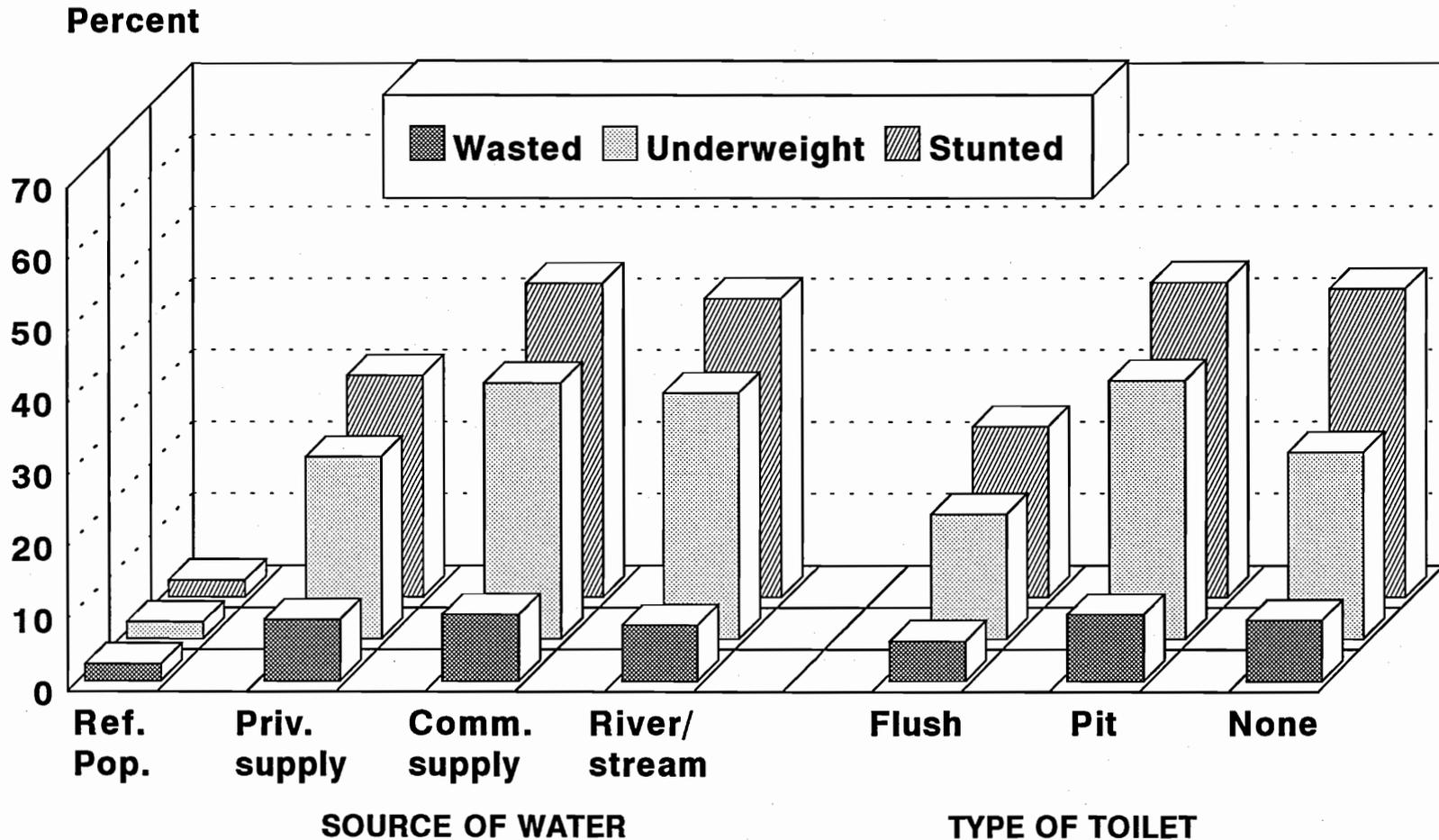
The source of water and type of toilet owned are representative of both household wealth and environmental sanitation. Poor households are more likely to obtain water from open-air sources or wells, and are less likely to have toilet facilities. Where water is not readily available, food hygiene is often inadequate. Furthermore, poor sanitation results in an increased number of insects (particularly flies), thus increasing the risk of food contamination. Both of the above increase the risk of diarrhoeal disease, which can result in undernutrition.

- **Over 40 percent of Nigerian households obtain water from rivers or other open-air sources, almost 50 percent use a community water supply (well or public pipe), and only 10 percent have water piped to their homes.**
- **Three in ten households have no toilet facilities, six out of ten have pit latrines, and less than one in ten has a flush toilet.**

Infants and children from households that have neither a private water supply nor a flush toilet are at greater risk of being undernourished than those from households with these amenities. This reflects not only the association between environmental sanitation (and thus the risk of diarrhoeal disease) and nutritional status, but also household wealth. Wealth determines the household food supply and the ability to have a private water supply and flush toilet. Although the availability of a private water supply or a flush toilet may be associated with a reduced risk of a child being undernourished, they do not ensure that a child will be well nourished.

- **Even among households with a private supply of water, one in three children is too short for their age as is one in four children from households with a flush toilet.**
- **About one in ten children from households with private supply of water is too thin, while about one in 20 children from households with a flush toilet is too thin.**

Figure 11
Undernutrition among Children under 5 Years by
Source of Water and Type of Toilet, Nigeria



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

Age-related Pattern of Diarrhoea among Children Age 1 to 24 Months, Nigeria

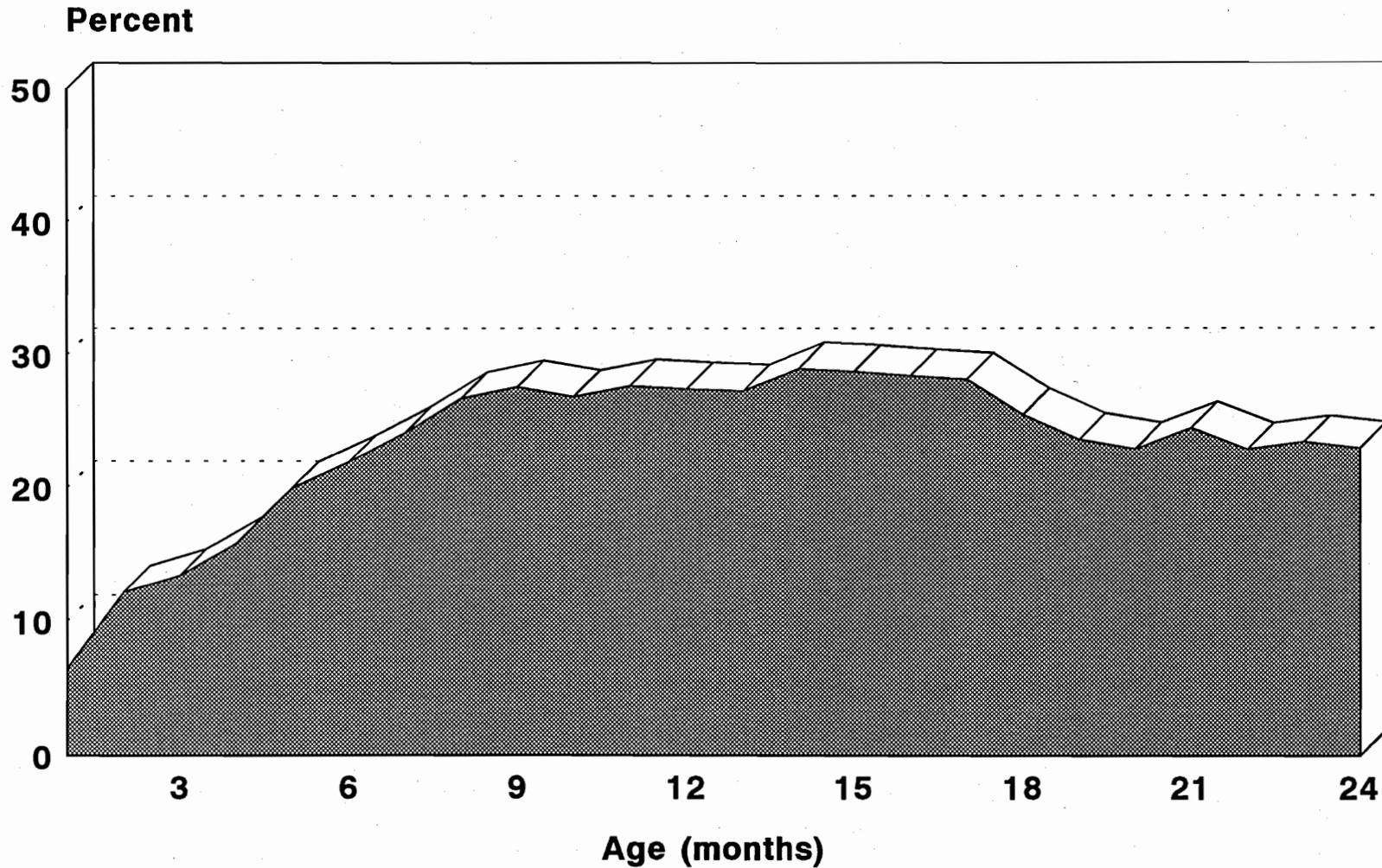
In Nigeria:

- **The prevalence of diarrhoea increases rapidly and dramatically among infants under 9 months of age and remains high among children 9 to 17 months of age before declining.**
- **The age-related pattern of diarrhoeal disease is similar to that for undernutrition. This is not surprising given that diarrhoea is a major determinant of undernutrition.**
- **The pattern of diarrhoea is the same in all four zones and for both urban and rural areas.**

The age-related pattern of diarrhoea reflects the increased risk of pathogen contamination associated with the early introduction of water, other liquids, and solid foods. In addition, once young children begin to crawl and move around, they tend to put objects into their mouths, increasing the risk of pathogen contamination.

- **Both the levels of undernutrition and diarrhoea are higher in the North West and North East than in the South West and South East zones and in rural than in urban areas (data not shown).**

Figure 12
Age-related Pattern of Diarrhoea among
Children Age 1 to 24 Months, Nigeria



Prevalence of Diarrhoea, Fever, and Cough among Children Age 1 to 24 Months¹ in Nigeria and other sub-Saharan Countries, DHS 1986-1991

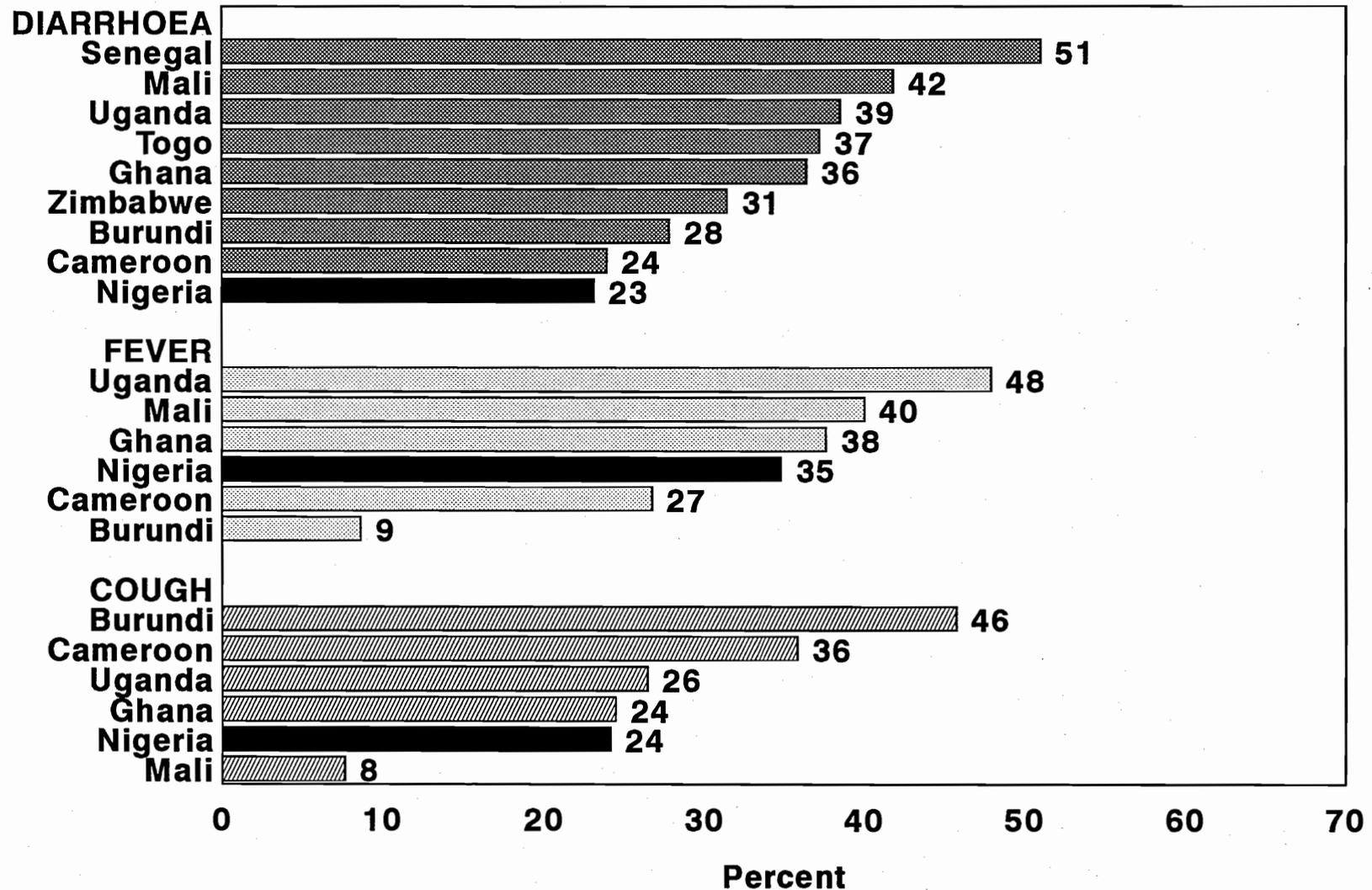
- **Nearly one in four Nigerian children under 24 months had diarrhoea in the two weeks preceding the survey but this level is less than that of other sub-Saharan countries.**
- **Over one in three Nigerian children was reported to have had fever in the preceding four weeks. This is lower than the levels found in some neighboring countries where malaria is also hyperendemic.**
- **About one in four Nigerian children was reported to have had a cough or rapid breathing in the preceding two weeks. This is comparable to the level for Ghana and Uganda but considerably higher than that for Mali, and lower than that for Burundi and Cameroon.**

It must be borne in mind that a mother's perception of diarrhoea may differ by country and this could influence these findings. Furthermore, there are seasonal patterns in the prevalence of diarrhoea, fever and respiratory illness and also inter-country differences which must be taken into account when comparing the results of the various Demographic and Health Surveys.

¹ Data are presented only for children under 2 years old because this age group is the most vulnerable to diarrhoeal disease.

Figure 13

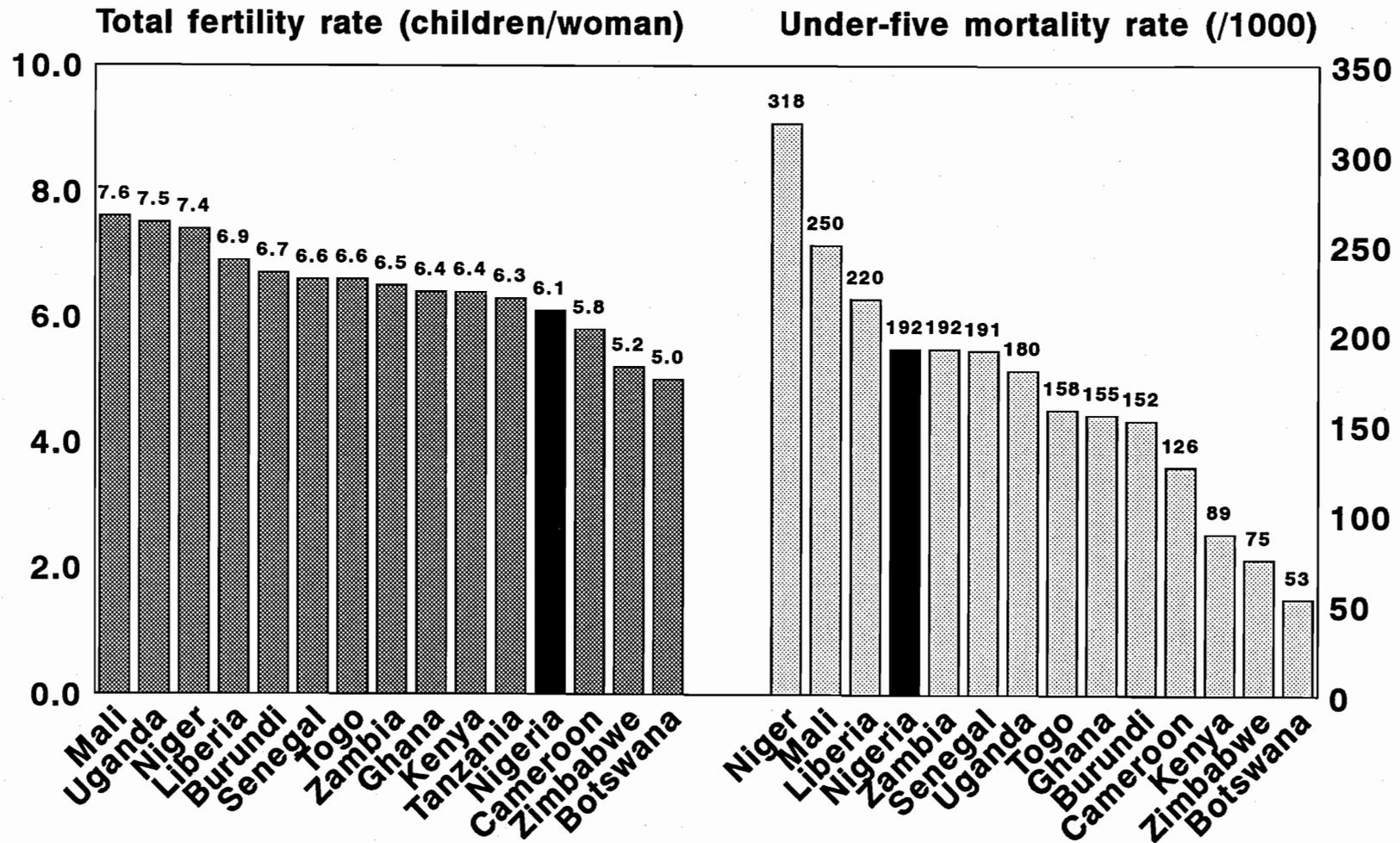
Prevalence of Diarrhoea, Fever, and Cough among Children Age 1 to 24 Months in Nigeria and other sub-Saharan Countries, DHS 1986-1991



Fertility and Child Mortality in Nigeria and other sub-Saharan Countries, DHS 1986-1992

- **The rate of childbearing in Nigeria is quite high. At current levels, Nigerian women have an average of 6.1 children by the end of their childbearing years (total fertility rate for women age 15 to 49 years), which is similar to many sub-Saharan countries.**
- **Almost one in five Nigerian children die before their fifth birthday. Nigeria has a very high under-five mortality rate of 192 deaths per 1000 births, fourth highest (with Zambia) among the countries surveyed. It is likely that the very high rate of infant mortality in Nigeria is related to the high levels of undernutrition in that country.**

Figure 14
Fertility and Child Mortality in Nigeria and
other sub-Saharan Countries, DHS 1986-1992



Appendix

The Nutrition Standard Distribution

The assessment of nutritional status is based on the concept that in a well-nourished population the distributions of children's height and weight, for 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 are considered relatively tall or overweight for their age or fat for their height. Another 14 percent will be between 1 and 2 standard deviations below the mean; these are considered relatively short or underweight for their age or 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, and 2 percent will be very short (stunted) or very underweight for their age or very thin (wasted) for their height, i.e., these categories are more than 2 standard deviations above or below the mean.

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