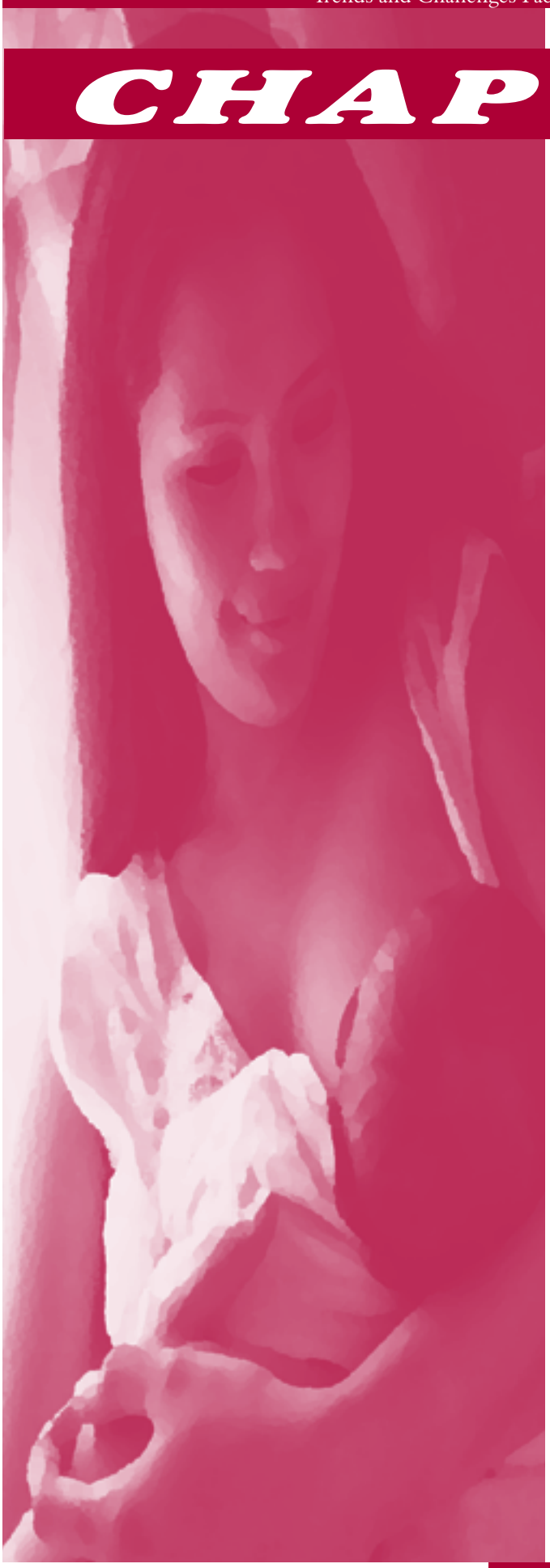
CHAPTER 10



Infant Feeding Practices and Nutrition Status of Children

This chapter covers three topics: breastfeeding of infants, nutritional status of children, and anemia in children and mothers.

Breastfeeding

Infant feeding practices influence the health of both the child and the mother. Breastfeeding is a primary determinant of an infant's nutritional status and its susceptibility to morbidity. Early initiation of breastfeeding permits the newborn to benefit immediately from colostrum, which is highly nutritious and contains the antibodies necessary to protect babies from infection before their immune systems are fully mature. The health of a woman is also affected by breastfeeding because it delays the return of ovulation and provides a period of time in which she is not susceptible to the risk of another pregnancy.

Table 10.1 and Graph 10.1 show that 94 percent or more of infants were breastfed, according to the last survey. In all of the countries, the percent of children who were breastfed has exceeded 90 percent since the early 1990s. In Nicaragua, 76.3 percent of infants were breastfed within the first hour, followed by Guatemala at 60.1 percent. The percentage of children breastfed within the first hour following birth is relatively low in Honduras (48.9 percent) and El Salvador (31.8 percent). In Nicaragua, Honduras, and Guatemala, over 80 percent of the children are breastfed within the first day, while only 60.2 percent of children are in El Salvador.

Table 10.1
Trends in the Initiation of Breastfeeding: Live Births in the 5 Years Prior to the Survey

Country	Year of Survey	Ever Breastfed	Within First Hour	Within First Day*
El Salvador	1993	91.2	13.6	37.9
El Salvador	1998	94.0	26.3	56.1
El Salvador	2002/03	94.4	31.8	60.2
Guatemala	1995	95.6	54.6	76.5
Guatemala	1998/99	96.5	48.5	77.0
Guatemala	2002	96.1	60.1	80.2
Honduras	1991/92	na	38.0	88.6
Honduras	1996	96.0	43.4	76.9
Honduras	2001	95.7	48.9	81.5
Nicaragua	1992/93	91.9	40.5	66.2
Nicaragua	1998	92.4	79.5	87.0
Nicaragua	2001	94.5	76.3	86.8

* Includes children breastfed in the first hour.

na: Not available.

Graph 10.1
Initiation of Breastfeeding: Live Births in the Five Year Period Prior to the Most Recent Survey

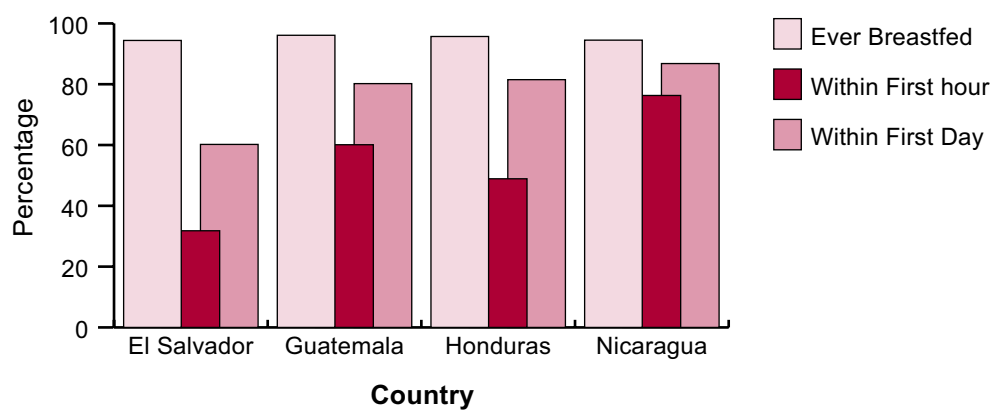


Table 10.2 and Graph 10.2 show data on the mean durations of breastfeeding. The duration of any breastfeeding, according to the last survey, is highest in Guatemala (20.5 months) and lowest in Honduras and Nicaragua (17.6 months). The durations of full breastfeeding (either exclusive breastfeeding or breastfeeding with water or liquids other than milk) were between 3.1 months in El Salvador and 4.1 months in Guatemala. The duration of exclusive breastfeeding ranges between 1.4 and 3.5 months. As expected, the percentage of children who are

Table 10.2
Trends in the Mean Duration of Breastfeeding (in months): Live Births in the 5 Years Prior to the Survey

Country	Year of Survey	Any Breastfeeding	Full Breastfeeding*	Exclusive Breastfeeding†
El Salvador	1993	15.5	2.8	0.8
El Salvador	1998	17.7	2.7	0.9
El Salvador	2002/03	19.2	3.1	1.4
Guatemala	1995	19.8	4.4	3.9
Guatemala	1998/99	19.9	3.7	3.4
Guatemala	2002	20.5	4.1	3.5
Honduras	1991/92	17.2	na	na
Honduras	1996	17.3	3.4	2.3
Honduras	2001	17.6	3.9	2.3
Nicaragua	1992/93	12.3	2.0	0.6
Nicaragua	1998	15.0	2.6	2.1
Nicaragua	2001	17.6	3.5	2.5

* Includes breastmilk alone, or breastmilk with water of other liquids but not including other types of milk.

† Just breastmilk.

na: Not available.

Graph 10.2
Mean Duration of Breastfeeding (In Months): Live Births in the Five Years Prior to the Most Recent Survey

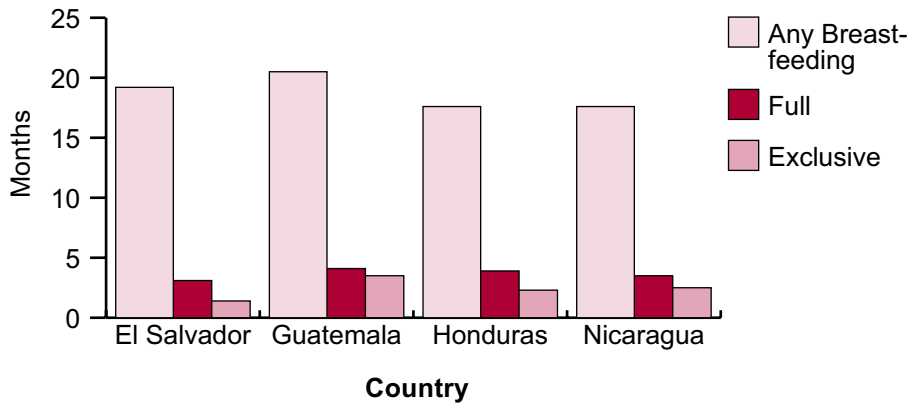


Table 10.3
Percentage of Children Who are Currently Being Exclusively Breastfed, According to Age of Child in Months (Most Recent Survey)

Country/Age	Year of Survey	Percentage
El Salvador	2002/03	
0–1		36.8
2–3		22.1
4–5		8.1
6–7		2.7
Guatemala	2002	
0–2		61.2
3–5		40.6
6–8		12.3
Honduras	2001	
0–2		47.2
3–5		21.6
6–8		6.1
Nicaragua	2001	
0–1		46.9
2–3		33.6
4–5		12.0
6–7		3.2

being exclusively breastfed decreases rapidly as the age of the children increases (Table 10.3). In El Salvador and Nicaragua, by the time children are 4–5 months of age, only 8.1 and 12.0 percent, respectively, are being exclusively breastfed.

Children were classified into one of several feeding categories based on current feeding practices, as reported by their mothers, according to age groupings that correspond to World Health Organization (WHO) infant feeding indicators. The categories are shown in Table 10.4, where children are classified as to whether they are not being breastfed, whether they are exclusively breastfed, predominantly breastfed, given complementary foods (breast milk and solid or semisolid foods), and whether children are still being breastfed at 12 to 15 months and 20–23 months.

As shown in Table 10.4, in Guatemala, nearly all children aged 0–5 months are breastfed (94.5 percent), while in Honduras less than 90 percent are breastfed at these ages. Rates of exclusive breastfeeding among children aged 0–5 months range from a low of 24.0 percent in El Salvador to a high of 50.6 percent in Guatemala, rates far from the ideal. Predominant breastfeeding ranges from 14.9 percent in Nicaragua to 22.1 percent in El Salvador. Focusing on infants 6–9 months of age, more than 60 percent of infants in this age group are given complementary foods in addition to breast milk, as is recommended from the age of 6 months onward. For children 12–15 months of age, the indicator of main interest is the proportion of children still breastfeeding, also known as the first-year breastfeeding continuation rate. Guatemala has the highest first-year continuation rate (81.1 percent) compared with the other countries. The percentage of children 20–23 months who are still breastfeeding ranges from a low of 33.5 percent in Honduras to a high of 47.4 percent in Guatemala.

As expected, the percentage of children aged 0–5 months being breastfed and exclusively breastfed is higher in the rural area than in the urban area. This reflects in part the need for urban mothers to return to the workplace more often than rural mothers and, therefore, begin weaning earlier. Among children aged 6–9 months, a higher percentage of rural children than urban children receive complementary foods. This reflects the greater likelihood that urban infants are weaned somewhat earlier than rural infants. Similarly, first-year continuation rates are higher in the rural area than in the urban area, as are the percentage of children who continue to breastfeed at ages 20–23 months, reflecting again the fact that urban children are weaned earlier.

Nutrition Status of Children

In order to objectively assess the nutritional status of children, the height and weight of children were measured in the surveys. Those measurements, in conjunction with a child's age, allowed for the calculation of three standard measures of physical growth: height-for-age, weight-for-height, and weight-for-age.

Table 10.4
Type of Breastfeeding (Indicators of the World Health Organization), According to Area of Residence, by Age of Child (In Months): Children Aged 0–23 Months (Most Recent Survey)

Country/ Area	Year of Survey	Not Breastfeeding		Exclusive Breastfeeding		Predominant Breastfeeding		Complementary Breastfeeding	Continued Breastfeeding	
		0–3	0–5	0–3	0–5	0–3	0–5	6–9	12–15	20–23
El Salvador	2002/03									
Total		5.6	8.0	29.5	24.0	23.9	22.1	75.9	67.4	43.2
Urban		7.6	11.2	24.5	18.7	26.4	23.9	75.0	57.1	36.5
Rural		3.6	4.4	34.4	29.8	21.5	20.1	76.8	75.5	50.6
Guatemala	2002									
Total		4.6	5.5	56.3	50.6	18.8	19.2	67.3	81.1	47.4
Urban		9.1	11.0	35.3	34.7	30.5	25.7	61.8	76.8	40.3
Rural		2.5	2.7	65.8	58.5	13.5	15.9	70.3	83.4	51.3
Honduras	2001									
Total		7.7	10.5	43.3	34.9	15.5	16.4	60.6	75.8	33.5
Urban		12.9	18.0	32.0	22.7	12.4	13.6	55.1	67.2	27.0
Rural		4.3	5.5	50.7	43.2	17.5	18.3	64.7	80.7	38.1
Nicaragua	2001									
Total		5.4	7.4	39.1	30.7	15.3	14.9	67.4	63.8	39.6
Urban		8.2	10.5	28.8	21.6	13.7	13.5	62.6	54.3	36.3
Rural		2.8	4.2	48.9	40.3	16.8	16.3	73.3	74.1	42.5

The nutritional status of children as measured by these indices can be evaluated by comparing their distributions on a specific index to that of a well-nourished, healthy population of children. The reference population used is that developed by the U.S. National Center for Health Statistics (NCHS) and accepted by the World Health Organization (WHO).

Height-for-age is a measure of physical growth over the child's life. A child whose height is more than 2 standard deviations below the mean of the NCHS reference population is considered stunted or very short for his or her age. Stunting is a condition that results from prolonged inadequate food intake or from recurrent episodes of illness.

Weight-for-height indicates the appropriateness of a child's weight given his/her height. A child whose weight is more than 2 standard deviations below the NCHS reference mean is referred to as wasted or too thin. This condition may reflect a recent period of inadequate food intake or a recent episode of illness.

Weight-for-age is a general indicator of a child's nutritional status. A child who falls more than 2 standard deviations below the NCHS reference mean on this index is referred to as underweight. The child may have suffered from chronic malnutrition (stunting) or acute malnutrition (wasting), but the index does not distinguish between those conditions.

Table 10.5
Percent of Children Classified as Undernourished by Three Anthropometric Indices*, According to Area of Residence: Children Aged 3–59 Months (Most Recent Survey)

Country/Area	Year of Survey	Stunted (height-for-age)	Wasted (weight-for-height)	Underweight (weight-for-age)
El Salvador	2002/03			
Total		18.9	1.4	10.3
Urban		11.0	1.3	6.9
Rural		25.6	1.4	13.2
Guatemala	2002			
Total		49.3	1.6	22.7
Urban		36.5	1.2	16.2
Rural		55.5	1.8	25.9
Honduras	2001			
Total		29.2	1.0	16.6
Urban		17.6	0.6	9.1
Rural		36.4	1.2	21.3
Nicaragua†	2001			
Total		20.2	2.0	9.6
Urban		12.0	1.3	6.1
Rural		28.8	2.7	13.2

* Percentages are for children at least 2 standard deviations below the median of the NCHS/CDC/WHO International Growth Reference Population (WHO, 1995).

† 0 to 59 months

Graph 10.3
Percentage of Children Classified as Low Height-for-age, Low Weight-for-height and Low Weight-for-age: Children Aged 3–59 Months (Most Recent Survey)

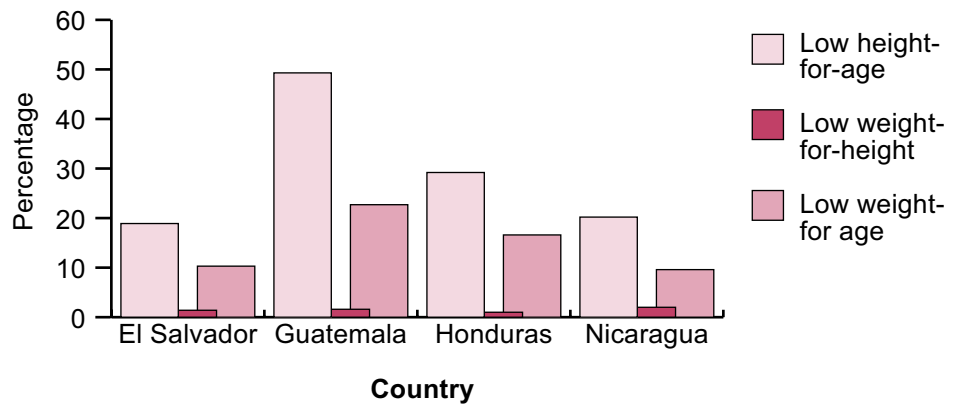


Table 10.5 and Graph 10.3 show the three indices of nutritional status for children aged 3–59 months, according to the last survey. The statistic shown for each index is the percentage of children who were more than 2 standard deviations below the mean value for the NCHS reference population.

In El Salvador and Nicaragua, 18.9 and 20.2 percent of children were classified as stunted while 29.2 and 49.3 percent were stunted in Honduras and Guatemala, respectively. The percentage of children suffering wasting ranged from a low of 1.0 percent in Honduras to a high of 2.0 percent in Nicaragua, while the percentage of children found to be underweight ranged from a low of 9.6 percent in Nicaragua to a high of 22.7 percent in Guatemala. In general, it is quite clear that substantially more children were classified as undernourished in Guatemala than in the other countries.

In general, the nutritional status of children has improved in each of the countries since the late 1980s (Table 10.6 and Graphs 10.4 and 10.5). For example, the percentage of children classified as stunted in El Salvador decreased by almost 13 percentage points between 1988

Table 10.6
Trends in the Percentage of Children Classified as Undernourished by Three Anthropometric Indices*: Children Aged 3–59 Months

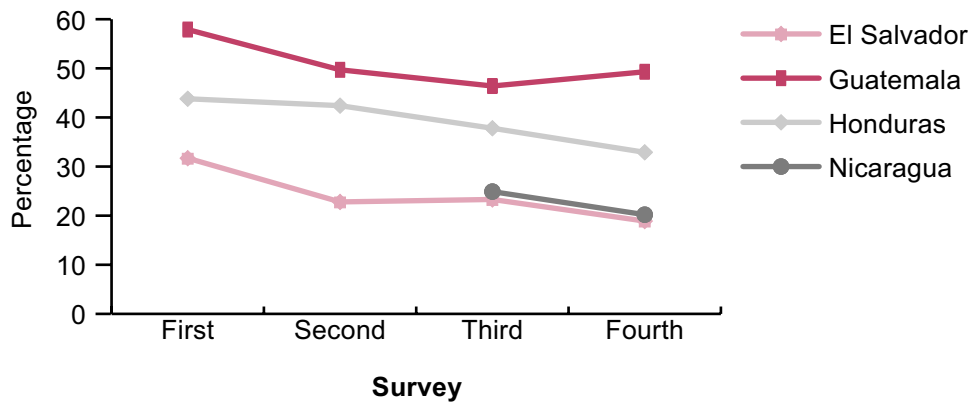
Country	Year of Survey	Stunted (height-for-age)	Wasted (weight-for-height)	Underweight (weight-for-age)
El Salvador	1988	31.7	2.1	16.1
El Salvador	1993	22.8	1.3	11.2
El Salvador	1998	23.3	1.1	11.8
El Salvador	2002/03	18.9	1.4	10.3
Guatemala	1987	57.9	na	33.5
Guatemala	1995	49.7	3.3	26.6
Guatemala	1998/99	46.4	2.5	24.2
Guatemala	2002	49.3	1.6	22.7
Honduras	1987†	43.8	1.9	24.1
Honduras	1991/92†	42.4	1.8	21.4
Honduras	1996†	37.8	1.4	24.3
Honduras	2001†	32.9	1.0	18.4
Nicaragua	1998‡	24.9	2.2	12.2
Nicaragua	2001‡	20.2	2.0	9.6

* Percentages are for children at least 2 standard deviations below the median of the NCHS/CDC/WHO International Growth Reference Population (WHO, 1995).

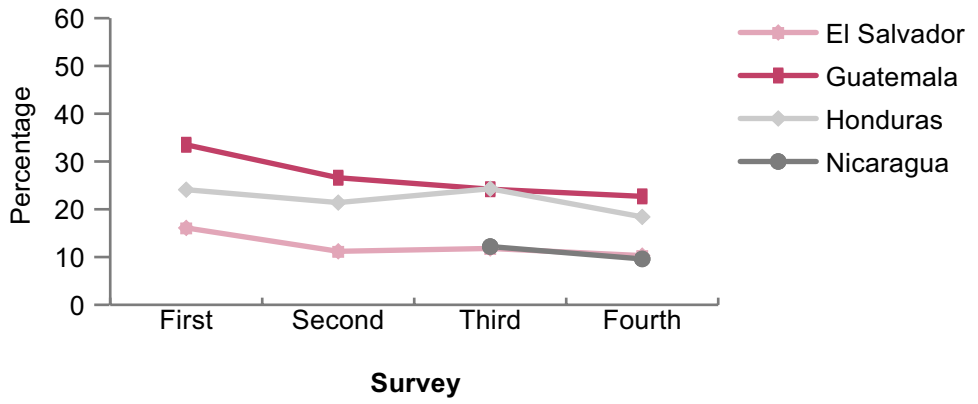
† Children aged 12-59 months.

‡ 0 to 59 months

Graph 10.4
Trends in the Percentage of Children Classified as Low Height-for-Age, According to Last Four Surveys: Children Aged 3–59 Months (12–59 Months for Honduras)



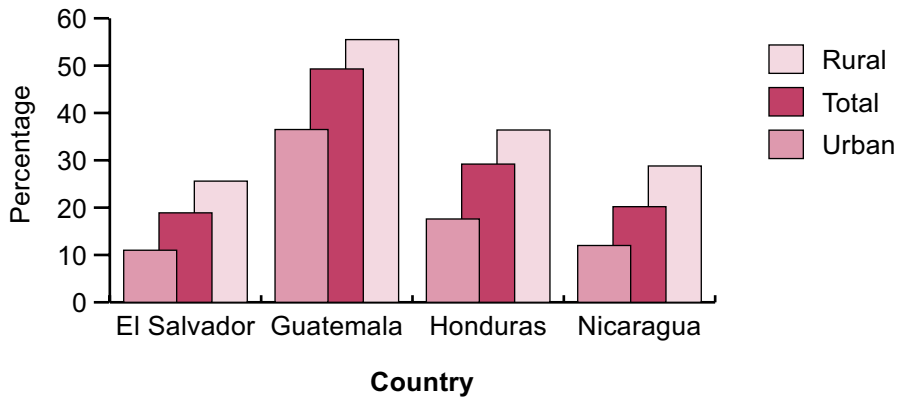
Graph 10.5
Trends in the Percentage of Children Classified as Low Weight-for-Age, According to Last Four Surveys: Children Aged 3–59 Months (12–59 Months for Honduras)



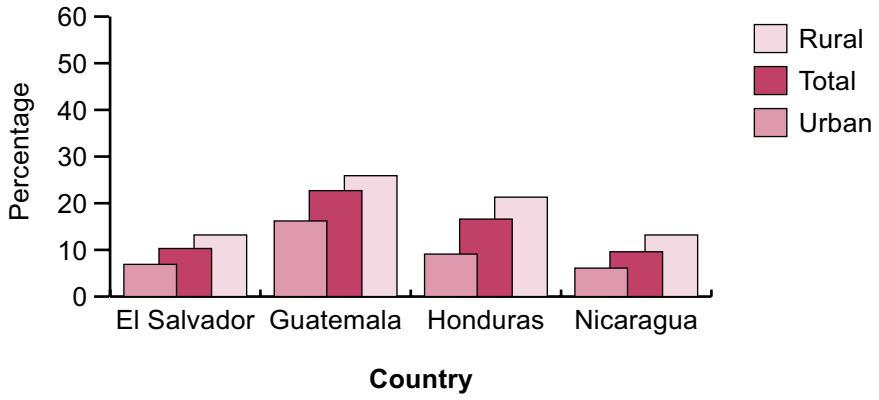
and 2002/03. In Honduras, the decrease was almost 11 percentage points between 1987 and 2001. In Guatemala, the percentage of children found to be underweight decreased by almost 11 percentage points since 1987, but it appears that there has been difficulty since 1995 in reducing the percentage of children who are stunted.

In terms of the stunting index or low height-for-age, greater levels of malnutrition are evident among children in rural as opposed to urban areas (Graph 10.6). Levels of underweight also tend to be greater among children who reside in rural areas (Graph 10.7).

Graph 10.6
Percentage of Children Classified as Low Height-for-Age, By Area of Residence: Children Aged 3–59 Months (Most Recent Survey)



Graph 10.7
Percentage of Children Classified as Low Weight-for-Age, By Area of Residence: Children Aged 3–59 Months (Most Recent Survey)



Maps 10.1 and 10.2 illustrate regional variations within countries in the percent of children classified as low height-for-age (stunted) and low weight-for-age (underweight). Using either indicator, most areas of Guatemala experience high levels of malnutrition. Western Honduras appears to be worse off than the rest of the country and Nicaragua experiences the most severe problems in the northeast part of the country. El Salvador is generally better throughout, as is the Pacific coast of Nicaragua.

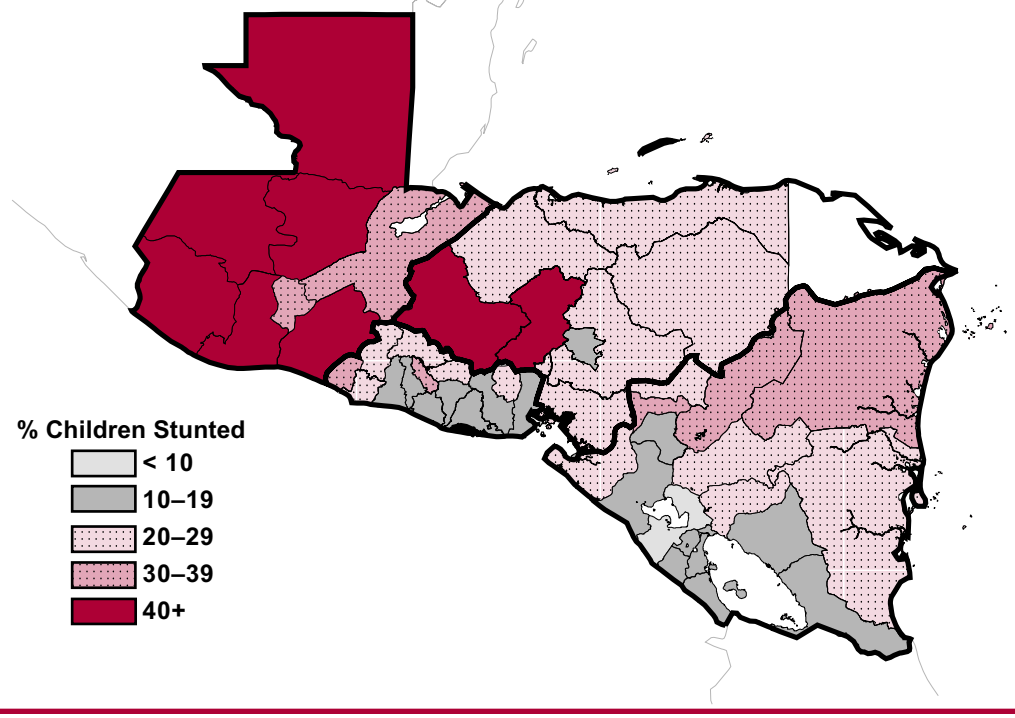
Anemia in Children

Anemia is a condition characterized by inadequate red blood cell volume and a low concentration of hemoglobin in the blood. Although many causes of anemia have been identified, nutritional deficiency, primarily due to a lack of dietary iron, accounts for most cases. According to the World Health Organization, 43 percent of young children are affected by anemia worldwide.

Iron-deficiency anemia in children is associated with impaired cognitive performance, motor development, coordination, language development, and scholastic achievement. Anemia increases morbidity from infectious diseases because it adversely affects several immune mechanisms.

There are several ways to improve iron status in children. A long-term goal is overall nutritional improvement through selection of iron-rich foods. Fortification of staples with iron allows increased iron intake with the usual diet, or children can be given either liquid or tablet supplements.

Map 10.1
Percent of Childern 3–59 Months of Age with Low Height for Age (Stunting) by Region / Department (Last Survey)



Map 10.2
Percent of Childern 3–59 Months of Age with Low Weight for Age (Underweight) by Region / Department (Last Survey)

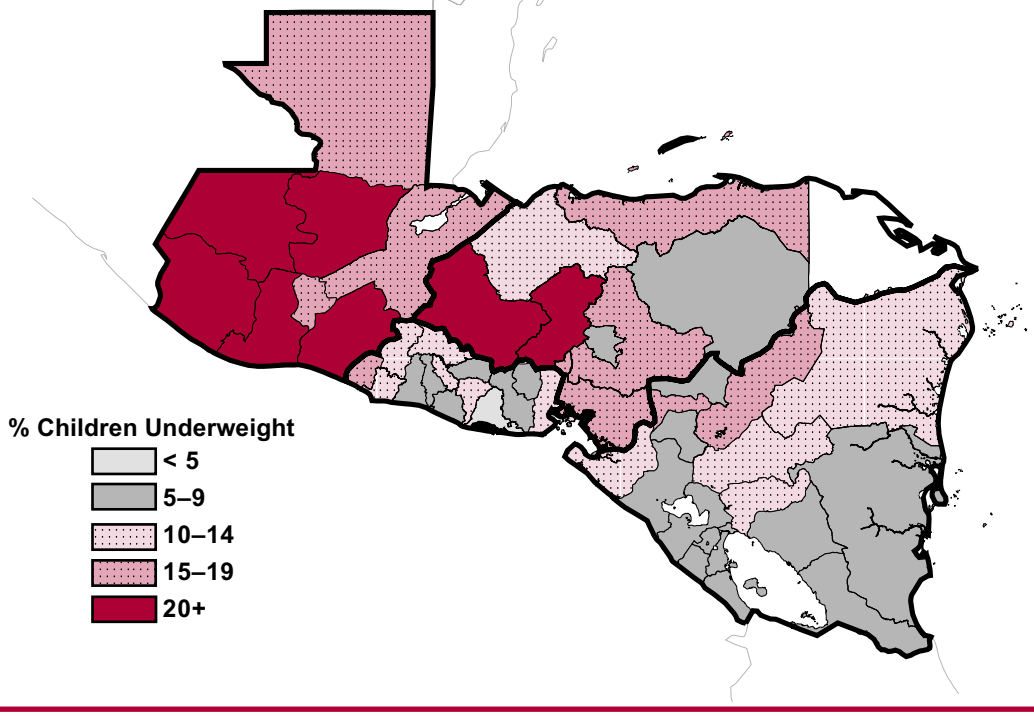


Table 10.7
Percentage of Children With Anemia, According to Selected Characteristics: Children Aged 12–59 Months (Most Recent Survey)

Selected Characteristics	El Salvador 2002/03	Guatemala* 2002	Honduras 2001	Nicaragua 2001
Total	19.8	39.7	29.9	na
Area of Residence				
Urban	15.8	35.2	29.4	na
Rural	23.1	41.8	30.2	na
Sex				
Male	21.1	41.2	30.5	na
Female	18.2	38.1	29.3	na
Age of Child				
12–23	33.4	55.6	45.3	na
24–35	20.2	38.5	30.7	na
36–47	15.4	30.1	23.0	na
48–59	10.9	21.4	18.7	na
Birth Order				
1	19.1	37.4	27.3	na
2–3	17.9	39.5	31.4	na
4–6	23.2	39.3	29.9	na
7+	22.9	42.4	30.8	na

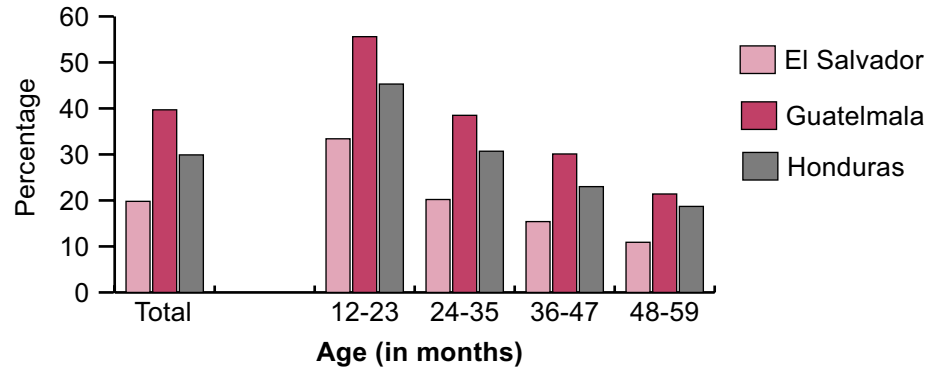
na: Not available.

* Children 6–59 months

Table 10.7 presents anemia rates for children aged 12–59 months in El Salvador, Guatemala, and Honduras, according to the last survey conducted in each country. The highest overall rate of anemia was observed in Guatemala (39.7 percent) and the lowest in El Salvador (19.8 percent).

Anemia rates in each country vary according to area of residence, sex of the child and age of the child. The prevalence of anemia among children living in rural areas was higher than among children living in urban areas. Also, boys were more likely to be anemic than girls, but the differences are small. In all of the countries,

Graph 10.8
Percentage of Children With Anemia, By Age of Child (In Months): Children Aged 12–59 Months



as the age of the children increases, the percent with anemia decreases (Graph 10.8). There are no significant differences in the anemia rates among children by their birth order.

As shown in Table 10.8, anemia rates tend to be lower among children whose mothers have 7 or more years of formal education and higher among children whose mothers have no formal education.

Table 10.8
Percentage of Children With Anemia, According to Education of Mother: Children Aged 12–59 Months (Most Recent Survey)

Country/Education	Year of Survey	Percentage
El Salvador	2002/03	
Total		19.8
None		23.2
1–3		24.4
4–6		22.1
7–9		16.8
10+		12.9
Guatemala*	2002	
Total		39.7
None		41.4
Primary		41.3
Secondary+		28.9
Honduras	2001	
Total		29.9
None		33.1
1–3		30.0
4–6		31.8
7+		23.2
Nicaragua	2001	
Total		na
None		na
1–3		na
4–6		na
Secondary		na
Superior		na

na: Not available.

* Children 6–59 months

Anemia in Mothers

According to the World Health Organization, 35 percent of women are affected by anemia worldwide. The most common cause of iron deficiency anemia in women is menstrual blood loss. Pregnancy and breastfeeding also drain iron stores, and low dietary intake (or poor iron absorption) also plays a part. Most women are unaware of the symptoms of anemia—shortness of breath, fatigue, weakness, headaches, and lapses of concentration—and tend to attribute such mild symptoms to the stresses of modern life. Yet, if anemia remains undiagnosed, it can lead to infertility in women of childbearing age and premature delivery in pregnant women.

Tables 10.9 and 10.10 show the percentage of non-pregnant women aged 15–49 in El Salvador, Guatemala, and Honduras who are anemic. The sampling methodology of the surveys was such that only women with at least one child aged 3–59 months were tested for anemia. The highest overall rate of anemia was found in Guatemala (20.2 percent) and the lowest in El Salvador (8.5 percent). In all three countries, mothers residing in rural areas were more likely to be anemic than mothers living in urban areas. As shown in Table 10.9, anemia rates vary according to age. The rates are relatively high among teenagers, then decline among women aged 20–29, only to increase among women aged 30–44. In general, women aged 45–49 present the lowest rates in each country. Finally, as expected, the percentage of women who are anemic decreases as the educational level of the women increases (Table 10.10). In Guatemala, the difference between women with no formal education and women with at least some secondary education is 13 percentage points.

Table 10.9
Percentage of Women With Anemia, According to Selected Characteristics: Non-Pregnant Women Aged 15–49 Years With Children Aged 3–59 Months
(Most Recent Survey)

Selected Characteristics	El Salvador 2002/03	Guatemala 2002	Honduras 2001	Nicaragua 2001
Total	8.5	20.2	14.7	na
Area of Residence				
Urban	8.2	16.5	13.9	na
Rural	8.8	22.3	15.2	na
Age				
15–19	8.8	28.1	14.3	na
20–24	7.7	18.2	13.8	na
25–29	6.9	17.1	12.7	na
30–34	9.8	23.7	17.0	na
35–39	9.4	20.0	18.0	na
40–44	13.6	20.9	15.7	na
45–49	8.7	16.2	10.1	na

na: Not available.

Table 10.10
Percentage of Women With Anemia, According to Education: Non-Pregnant Women Aged 15–49 Years With Children Aged 3–59 Months (Most Recent Survey)

Country/Education	Year of Survey	Percentage
El Salvador	2002/03	
Total		8.5
None		7.7
1–3		9.3
4–6		10.0
7–9		9.8
10+		5.6
Guatemala	2002	
Total		20.2
None		24.7
Primary		20.5
Secondary+		11.2
Honduras	2001	
Total		14.7
None		18.7
1–3		15.3
4–6		14.2
7+		12.8
Nicaragua	2001	
Total		na
None		na
1–3		na
4–6		na
Secondary		na
Superior		na

na: Not available.

Summary of Findings

- In all of the countries, more than 94 percent of infants were breastfed. The percentage of infants who were breastfed within the first hour after birth ranged from a low of 31.8 percent in El Salvador to a high of 76.3 percent in Nicaragua. Similarly, the percentage of children who were breastfed within the first day ranged from a low of 60.2 percent in El Salvador to a high of 86.8 percent in Nicaragua.
- Exclusive breastfeeding rates indicate that the practice is far from ideal. The fact that predominant breastfeeding rates are low indicates many children are receiving complementary foods earlier in life than is recommended by the WHO.
- Anthropometric measures of physical growth were presented to assess the nutritional status of children. Significant differences were found between Guatemala and the other three countries. Stunting ranged from a low of 18.9 percent in El Salvador to a high of 49.3 percent in Guatemala, while levels of underweight children ranged from a low of 9.6 percent in Nicaragua to a high of 22.7 percent in Guatemala.
- Although the nutritional status of children has improved in each of the countries since the late 1980s, important urban/rural differentials in favor of the urban area still exist.
- The percentage of children aged 12–59 months with anemia in El Salvador, Guatemala, and Honduras is 19.8, 39.7 and 29.9 percent, respectively, while the percentage of women aged 15–49 with anemia is 8.5, 20.2 and 14.7 percent, respectively. For both groups, the prevalence of anemia is higher in the rural area than in the urban area.