NUTRITION OF WOMEN AND CHILDREN 11

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This chapter covers two topics: infant feeding practices and the nutritional status of women and their children born in the five years preceding the survey. Infant feeding is described in terms of breastfeeding practices, supplementary feeding practices, and the use of bottles for supplementary feeding. Nutritional status is reported in terms of the height and weight of women and children and the prevalence of anemia.

11.1 BREASTFEEDING AND SUPPLEMENTATION

The pattern of infant feeding has an important influence on the health of children. Feeding practices are the principal determinant of a young child's nutritional status, and poor nutritional status has been shown to increase the risk of illness and death among children. Breastfeeding practices also have an effect on the mother's fertility. Frequent breastfeeding for long durations is associated with longer periods of postpartum amenorrhea and thus longer birth intervals and lower fertility.

Optimal infant feeding is defined by WHO and UNICEF as follows (WHO/UNICEF, 1990; WHO, 1994):

- Initiation of breastfeeding within about 30 to 60 minutes of birth Frequent, on-demand feeding (including night feeds)
- Exclusive breastfeeding (defined as breast milk only and no other foods or liquids until the infant is about six months of age)
- Breastfeeding complemented with hygienically prepared, appropriate local foods at about six months of age
- Increased breastfeeding during illness and recovery Continued breastfeeding well into the second year of life and beyond.

The importance and necessity of breastfeeding is well known in Armenia, and in 1993, the Ministry of Health adopted a state program on breastfeeding. The program advises that children be exclusively breastfed until six months of age and breastfeeding be continued until two years of age with supplemental feeding. In conjunction with the state program, reforms have occurred in delivery hospitals, as part of the "Baby Friendly Hospital Initiative." Examples of these reforms include the immediate contact between mother and newborn, early initiation of breastfeeding (in the first 30 to 60 minutes), allowing the mother and newborn to stay in the same hospital room, feeding upon request, and other baby-friendly practices.

In the ADHS, for each child born in the last five years, mothers were asked whether they had breastfed the child and if so, how long after delivery breastfeeding was initiated. Women were also asked whether their children were still breastfeeding and the age at which supplemental feeding began. Finally, for children not currently breastfeeding, the age at which they stopped breastfeeding was obtained.

Initiation of breastfeeding

The early initiation of breastfeeding is important for a number of reasons. First, it takes advantage of the newborn's suckling reflex and alertness immediately postpartum. Early suckling also benefits mothers because it stimulates breast milk production and releases a hormone that helps the uterus to contract and reduce postpartum blood loss. The first breast milk contains colostrum, which is highly nutritious and has antibodies that protect the newborn from diseases. Early initiation of breastfeeding also fosters bonding between mother and child.

Table 11.1 shows that 88 percent of all children born in the five years before the survey were breastfed. There is little variation by background characteristics, with the exception of region. The percentage of children ever breastfed ranges from 96 percent in Lori to 80 percent in Shirak. Overall, 24 percent of children were breastfed within 1 hour of birth and 78 percent were breastfed within 24 hours of birth. In urban areas, children are more likely to start breastfeeding within one hour of birth than in rural areas (27 percent versus 21 percent). There is also significant variation by region. More than a third (35 percent) of children in Gegharkunik began breastfeeding within one hour of birth, as opposed to just 7 percent in Vayots Dzor.

Prelacteal feeding is the practice of giving other liquids to a child during the period after birth before the mother's milk is flowing freely. Overall, 14 percent of children were given a prelacteal meal. Region is strongly associated with this practice, ranging from a high of 27 percent in Vayots Dzor to a low of 3 percent in Aragatsotn. Although children in urban areas are more likely to begin breastfeeding within one hour of birth, they are also more likely to have a prelacteal meal than children in rural areas (17 percent versus 10 percent).

Breastfeeding patterns by age

Exclusive breastfeeding, defined as breast milk as the only source of infant food or liquid, meets nutritional requirements (Cohen et al., 1994) and protects against illness (Huffman and Combest, 1990) for about the first six months of life. Children who received only breast milk in the 24 hours before the survey are defined as being *exclusively breastfed,* and children who are *fully breastfed* received only plain water in addition to breast milk. Exclusive breastfeeding is recommended for the first six months of a child's life because breast milk is uncontaminated and contains all the nutrients necessary for children in the first few months of life. In addition, the mother's antibodies in breast milk provide immunity to disease. Early supplementation is discouraged for several reasons. First, it exposes infants to pathogens and increases their risk of infection, especially diarrheal disease. Second, it decreases infants' intake of breast milk and therefore suckling, which reduces breast milk production. Third, in a harsh socioeconomic environment, supplementary food is often nutritionally inferior.

To obtain information on feeding patterns, mothers were asked about the breastfeeding status of all children under the age of five in the 24-hour period before the survey and about what other liquids or solids (if any) had been given to the child during that period. Even though information on breastfeeding was collected for all children born in the five years preceding the survey, the tables on breastfeeding are restricted to children born in the three years before the survey because most children are weaned by age three.

<u>Table 11.1 Initial breastfeeding</u>

Percentage of children born in the five years preceding the survey who were ever breastfed, and among children ever breastfed, the percentage who started breastfeeding within one hour and within one day of birth, and percentage who received a prelacteal feed, by background characteristics, Armenia 2000

Background characteristic	Percentage of children ever breastfed	Number of children	Among children ever breastfed, percentage who started breastfeeding:		Percentage of children who received a prelacteal feed[2]	Number of children
			Within 1 hour of birth	Within 1 day of birth[1]		
Child's sex						
Male	88.9	937	24.5	79.0	13.8	834
Female	87.1	719	23.7	75.4	13.8	626
Residence						
Urban	87.3	838	27.0	77.0	17.1	732
Rural	89.0	819	21.3	78.0	10.4	729
Region						
Yerevan	83.5	459	27.2	77.1	20.4	384
Aragatsotn	92.2	96	28.1	81.0	3.3	88
Ararat	84.6	207	18.8	75.3	14.9	175
Armavir	91.8	164	22.2	67.4	13.3	151
Gegharkunik	90.8	182	34.7	84.4	6.0	165
Lori	95.8	142	29.8	83.3	10.5	136
Kotayk	93.5	106	17.2	83.9	5.7	99
Shirak	79.8	117	20.0	81.3	20.0	93
Syunik	88.6	63	11.9	58.4	8.9	55
Vayots Dzor	93.4	33	7.1	86.6	26.8	31
Tavush	93.6	88	17.0	72.1	14.3	82
Mother's education						
Primary/middle	84.6	155	27.1	76.6	9.7	131
Secondary	88.0	669	23.3	78.3	12.6	588
Secondary-special	89.6	550	21.8	77.2	16.1	493
Higher	87.7	283	29.1	76.3	14.2	248
Assistance at delivery						
Health professional[3]	88.0	1,604	24.3	77.4	14.1	1,412
Other	92.3	46	(19.4)	(80.4)	(3.2)	42
No one	*	5	*	*	*	4
Place of delivery						
Health facility	88.6	1,513	24.5	76.9	14.8	1,340
At home	83.2	141	20.5	85.0	2.0	117
Total	88.1	1,657	24.1	77.5	13.8	1,460

Note: Table is based on all children whether living or dead. Total includes 2 children with missing information on place at delivery and 2 children with missing information on assistance at delivery. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Figures in parentheses are based on 25-49 unweighted cases.
[1] Includes children who started breastfeeding within one hour of birth
[2] Children given something other than breast milk during the first three days of life before the mother started breastfeeding regularly
[3] Doctor, nurse, or midwife

Table 11.2 describes infant feeding practices of Armenian mothers. Among children under four months of age, 95 percent are breastfed. Forty-five percent of children are exclusively breastfed. In addition to breast milk, 14 percent are given nonbreast milk, 29 percent are given water or other liquids, and 8 percent are given solid or mushy food. Although the majority of Armenian children continue to breastfeed through nine months of age, almost all receive supplements in addition to breast milk. Among children age 8-9 months, more than half (54 percent) are still breastfeeding. Among children age 10-11 months, this proportion drops to 35 percent. Only 12 percent of children age 20-23 months are still being breastfed (Figure 11.1).

Table 11.2 Breastfeeding status by child's age

Percent distribution of all children by breastfeeding status, and percentage using a bottle with a nipple, according to child's age in months, Armenia 2000

| Age in months | Not breast-feeding | Exclu-sively breast-fed | Breastfeeding and: | | | | Total | Using a bottle with a nipple | Number of living children |
			Plain water only	Water-based liquids/ juice	Other milk	Comple-mentary foods			
<2	(0.0)	(62.5)	(13.5)	(11.9)	(12.1)	(0.0)	(100.0)	(22.5)	36
2-3	7.8	33.8	18.4	12.8	14.5	12.7	100.0	40.5	59
4-5	29.8	4.1	3.7	14.3	16.8	31.3	100.0	58.6	54
6-7	(22.0)	(2.9)	(10.6)	(4.8)	(3.4)	(56.3)	(100.0)	(44.3)	40
8-9	46.1	2.5	0.0	1.0	3.4	47.0	100.0	46.6	57
10-11	65.3	2.1	0.0	0.0	1.0	31.6	100.0	43.1	53
12-15	71.2	0.0	0.0	0.0	0.0	28.8	100.0	46.1	110
16-19	78.3	0.0	0.0	0.0	0.0	21.7	100.0	50.0	90
20-23	87.5	0.0	0.0	0.0	0.0	12.5	100.0	24.7	99
24-35	94.0	0.4	0.0	0.0	0.0	5.6	100.0	17.7	281
<4	4.9	44.6	16.6	12.5	13.6	7.9	100.0	33.7	95
4 to 5	29.8	4.1	3.7	14.3	16.8	31.3	100.0	58.6	54
6 to 9	36.2	2.6	4.3	2.6	3.4	50.8	100.0	45.6	97

Note: Breastfeeding status refers to a 24-hour recall period (the day and night preceding the interview). Children classified as *breastfeeding and plain water only* receive no supplements. The categories of not breastfeeding, exclusively breastfeeding, breastfeeding and plain water, water-based liquids, non-breast milk, and complementary foods (solids and semisolids) are hierarchical and mutually exclusive, and their percentages add to 100 percent. Thus, a child who receives breast milk and water-based liquids and who does not receive complementary foods is classified in the water-based liquid category even though she/he may also get plain water. Any child who gets complementary food is classified in that category as long as she/he is breastfeeding as well. The percentages who use a bottle are based on all children. Figures in parentheses are based on 25-49 unweighted cases.

Use of bottles with nipples is rather high: among children under four months of age, one-third (34 percent) use a bottle, and among children age 4-5 months, the proportion increases to 59 percent. These data show that improvements must be made before Armenian children are breastfed according to international standards.

Figure 11.1 Distribution of Children by Breastfeeding Status, According to Age in Months
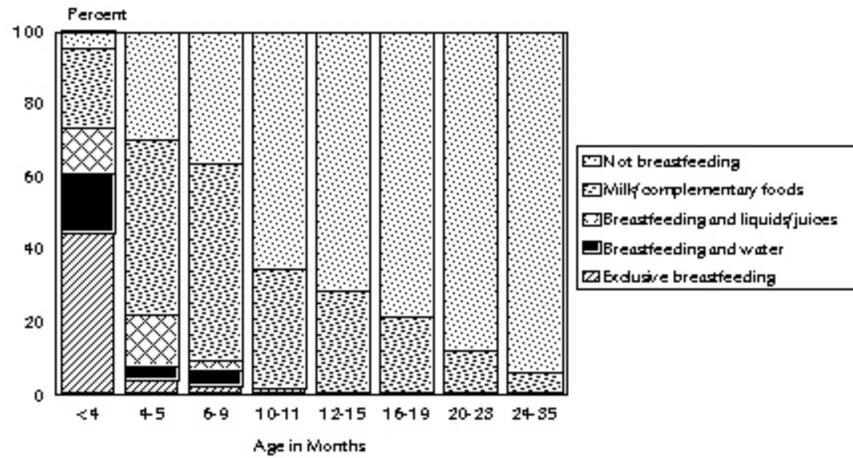
Armenia DHS 2000

Table 11.3 shows that the median duration of any breastfeeding is nine months; the duration of exclusive and predominant breastfeeding (breastfeeding plus plain water), however, is short (little more than one month and three months, respectively). These figures indicate that levels of complete breastfeeding in Armenia are lower than optimal. There is significant variation by background characteristics. Median duration of breastfeeding is ten months among children residing in urban areas and eight months among those in rural areas. Breastfeeding duration also varies by region, from a low of approximately 7 months in Kotayk and Syunik to almost 11 months in Yerevan and Lori. There is a strong relationship between education and breastfeeding: the higher a woman's educational attainment, the longer she is likely to breastfed her child. For example, a woman with a primary/middle school education breastfeeds for an average of six months, while women with higher education breastfeed for ten months.

Table 11.4 shows that 85 percent of all breastfeeding children were breastfed at least six times in the 24 hours preceding the survey. According to the ADHS, the mean number of daytime feeds is five and the mean number of nighttime feeds is three; the resulting total of eight feeds is considered sufficient for a 24-hour period.

Table 11.3 Median duration of breastfeeding

Median duration of any breastfeeding, exclusive breastfeeding, and predominant breastfeeding among children born in the three years preceding the survey, by background characteristics, Armenia 2000

| | Median duration of breastfeeding in months | | | |
Background characteristic	Any breast-feeding	Exclusive breast-feeding	Predo-minant breast-feeding[1]	Number of children
Child's sex				
Male	9.1	1.3	3.2	501
Female	9.1	1.7	2.9	378
Residence				
Urban	10.1	1.4	3.4	453
Rural	8.2	1.5	2.9	427
Region				
Yerevan	10.5	0.7	4.7	252
Aragatsotn	8.5	1.6	2.5	46
Ararat	8.3	2.2	2.2	114
Armavir	9.8	0.8	2.7	79
Gegharkunik	9.1	2.5	5.2	103
Lori	10.8	1.3	2.2	84
Kotayk	(6.5)	(1.9)	(2.5)	45
Shirak	(8.5)	(1.9)	(2.1)	60
Syunik	7.1	1.9	3.4	32
Vayots Dzor	7.8	0.6	2.2	19
Tavush	8.0	1.4	2.4	46
Mother's education				
Primary/middle	5.8	0.7	2.2	85
Secondary	9.5	1.7	3.3	339
Secondary-special	9.0	1.1	3.9	301
Higher	10.3	1.4	2.0	154
Total	9.1	1.4	3.1	880
Mean for all children	12.0	2.8	4.4	-

Note: Medians and means are based on current status. Figures in parentheses are based on 25-49 unweighted cases.
[1]Either exclusively breastfed or received breast milk and plain water, water-based liquids, and/or juice only (excludes milk other than breast milk)

Table 11.4   Frequency of breastfeeding

Percentage of breastfeeding children under six months of age who were breastfed six or more times in the 24 hours preceding the survey and mean number of feeds (day/night), by background characteristics, Armenia 2000

| | Children under 6 months[1] | | | |
Background characteristic	Percentage breastfed 6+ times in last 24 hours	Mean number of day feeds	Mean number of night feeds	Number of children
Child's sex				
Male	87.1	5.3	3.0	75
Female	82.2	4.9	2.9	53
Residence				
Urban	89.0	5.3	2.9	68
Rural	80.6	5.0	3.1	60
Total	85.0	5.1	3.0	128

Note: Means are based on current status.
[1] Excludes children for whom there is no valid answer on the number of times breastfed

Supplemental foods

The nutritional requirements of young children are more likely to be met if they are fed a variety of foods from 6 months of age. In the ADHS, interviewers read a list of specific foods and asked the mother to report the number of days during the last seven days that the child received each food. For any food consumed at least once in the last seven days, the mother was also asked for the number of times the child had consumed the food in the 24 hours preceding the survey. Tables 11.5 and 11.6 present information on the types of foods given to children during the 24-hour period before the survey. Table 11.7 shows the mean number of days children consumed specific foods in the seven days before the survey. The foods given to a child are not mutually exclusive; therefore, a child could be reported as receiving several types of food.

Table 11.5 shows that during the 24 hours preceding the interview, 9 percent of breastfeeding children under four months of age received infant formula, 11 percent received dairy products, and 27 percent received other liquids. Four percent received solid or semisolid food. Among breastfeeding children age four months and older, the percentage receiving complementary foods steadily increases. Overall, a majority of breastfeeding children receive liquids, grains such as porridge, and fruits and vegetables. These data indicate that breastfeeding practices in Armenia should be improved because giving supplemental foods to children under six months of age can be detrimental to the child's health.

Table 11.5 Foods consumed by children in preceding 24 hours

Percentage of children under three years of age living with the mother who consumed specific foods in the 24 hours preceding the interview, by breastfeeding status and child's age, Armenia 2000

Child's age in months	Infant formula	Other milk/ cheese/ yogurt	Other liquids[1]	Solid/semisolid foods						Number of children
				Grains/ bread/ cereal/ porridge	Fruits/ vege- tables	Beans/ legumes/ lentils	Meats/ fish/ poultry/ eggs	Other vegetables and starches[2]	Any solid or semi- solid food	
BREASTFEEDING CHILDREN										
<4	8.9	10.9	26.5	1.3	5.8	0.0	0.0	1.4	3.8	90
4-5	(19.8)	(37.6)	(75.8)	(31.8)	(27.3)	(0.0)	(3.2)	(20.0)	(24.9)	38
6-9	5.8	65.7	75.1	68.6	72.1	1.9	19.0	57.2	62.1	62
Total	7.7	47.5	62.0	50.5	51.7	3.6	20.2	39.9	47.2	289
NONBREASTFEEDING CHILDREN										
6-9	(17.1)	(92.9)	(91.2)	(84.9)	(89.7)	(3.5)	(28.4)	(64.2)	(88.0)	35
10-11	(22.6)	(96.0)	(96.0)	(75.4)	(89.1)	(3.3)	(40.7)	(62.4)	(76.3)	35
12-15	6.9	81.4	92.2	96.7	94.2	13.3	47.7	76.5	83.1	79
16-19	2.0	90.3	98.4	95.1	87.6	14.3	60.0	73.0	75.8	70
20-23	10.6	85.6	89.1	94.3	92.2	17.6	58.2	73.9	85.5	87
24-35	3.7	81.0	91.9	95.3	95.9	18.4	61.8	83.5	86.6	264
Total	7.4	84.5	92.5	91.7	91.5	14.9	54.0	75.6	82.2	590

Note: Breastfeeding status refers to a 24-hour recall period (the day and night preceding the interview). Percentages may sum to more than 100 because each child may have received more than one type of supplement. Figures in parentheses are based on 25-49 unweighted cases.
[1] Does not include plain water
[2] Includes foods rich in vitamin A, such as pumpkin and squash, and starches, such as potatoes

Among nonbreastfeeding children, nine out of every ten received liquids, grains, and fruits and vegetables during the 24-hour period preceding the interview. Eighty-five percent received dairy products, and 76 percent received other vegetables and starches, which may include vegetables that are high in vitamin A. A majority of nonbreastfeeding children (54 percent) also received a source of protein in the 24 hours preceding the interview.

Table 11.6 shows the frequency of complementary feeding by food type reported by mothers for children under age three during the 24 hours preceding the interview.

By age six months, children should be receiving solid foods in their diet in addition to breast milk. Various liquids and solid and semisolid foods are given to breastfeeding children starting late in the first year of life.

For children who are no longer breastfeeding, the need for varied and substantial nutritional inputs is even greater than before weaning. The ADHS data show that among children who are fully weaned, the food given most frequently is bread (more than two times per day). Fruits and vegetables containing vitamin A are, on average, given once a day, and other fruits and vegetables are given almost twice a day. Cheese or yogurt is given once a day, and so is other milk.

Table 11.6 Frequency of foods consumed by children in preceding 24 hours

Mean number of times specific foods were consumed by children under three years in the 24 hours preceding the interview, by breastfeeding status and child's age, Armenia 2000

Child's age in months	Infant formula	Powdered, tinned, or fresh milk	Fruit juice	Tea	Other liquids[1]	Food made from grain	Bread, food made from flour	Pumpkin, squash, yams, carrots, potatoes, cabbage	Green leafy vege-tables	Other fruits, vege-tables	Beans, legumes, lentils	Meats, poultry, eggs	Fish, shellfish, seafood	Cheese or yogurt	Number of children
BREASTFEEDING CHILDREN															
<4	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	90
4-5	(0.4)	(0.5)	(0.6)	(0.9)	(0.1)	(0.3)	(0.1)	(0.2)	(0.0)	(0.3)	(0.0)	(0.0)	(0.0)	(0.2)	38
6-9	0.1	0.8	0.8	0.7	0.8	0.5	1.1	0.6	0.1	0.9	0.0	0.2	0.0	0.6	62
Total	0.2	0.5	0.5	0.6	0.5	0.4	1.0	0.5	0.1	0.8	0.0	0.2	0.0	0.5	289
NONBREASTFEEDING CHILDREN															
6-9	(0.5)	(2.6)	(0.6)	(1.2)	(0.9)	(0.7)	(1.4)	(0.8)	(0.1)	(0.9)	(0.1)	(0.3)	(0.0)	(0.5)	35
10-11	(0.5)	(2.0)	(1.0)	(1.0)	(0.9)	(0.7)	(1.6)	(0.7)	(0.2)	(1.6)	(0.0)	(0.5)	(0.2)	(1.0)	35
12-15	0.2	1.6	0.7	1.3	1.1	0.9	2.6	0.9	0.1	1.7	0.1	0.5	0.1	0.9	79
16-19	0.0	1.1	0.5	1.3	1.2	0.7	2.4	1.0	0.2	1.8	0.2	0.7	0.1	1.0	70
20-23	0.2	0.9	0.6	1.3	1.2	0.6	2.6	1.2	0.2	1.9	0.2	0.7	0.1	1.2	87
24-35	0.1	0.6	0.6	1.2	1.0	0.7	2.6	1.1	0.3	2.0	0.2	0.6	0.2	1.2	264
Total	0.2	1.1	0.6	1.2	1.0	0.7	2.4	1.0	0.2	1.8	0.2	0.6	0.1	1.1	590

Note: Breastfeeding status refers to a 24-hour recall period (the day and night preceding the interview). Figures in parentheses are based on 25-49 unweighted cases.

Table 11.7 shows the frequency of foods consumed by children in the seven days preceding the survey. In general, breastfeeding children under four months of age consumed supplementary liquids and foods only infrequently. As expected, the frequency of liquids and foods consumed by children increases among children age 4-5 months and 6-9 months.

Among nonbreastfeeding children, tea, other milk, and other liquids are consumed most days of the week. Breads and cheese or yogurt are given most days (six days and five days, respectively), and so are foods rich in vitamin A such as carrots and squash and other fruits and vegetables (five days and six days, respectively).

Table 11.7 Frequency of foods consumed by children in preceding 7 days

Mean number of days specific foods were consumed by children under three years in the 7 days preceding the interview, by breastfeeding status and child's age, Armenia 2000

Child's age in months	Infant formula	Powdered, tinned, or fresh milk	Fruit juice	Tea	Other liquids[1]	Food made from grain	Bread, food made from flour	Pumpkin, squash, yams, carrots, potatoes, cabbage	Green leafy vegetables	Other fruits, vegetables	Beans, legumes, lentils	Meats, poultry, eggs	Fish, shellfish, seafood	Cheese or yogurt	Number of children
BREASTFEEDING CHILDREN															
<4	0.6	0.8	0.7	1.0	0.5	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.1	90
4-5	(1.4)	(1.2)	(3.9)	(3.7)	(0.6)	(1.6)	(0.4)	(1.3)	(0.0)	(1.6)	(0.0)	(0.3)	(0.0)	(1.2)	38
6-9	0.4	2.4	3.1	3.1	2.9	2.6	3.6	3.3	0.5	3.7	0.1	1.3	0.2	2.9	62
Total	0.5	1.6	2.3	2.8	2.2	2.1	3.0	2.5	0.4	3.1	0.3	1.2	0.1	2.4	289
NONBREASTFEEDING CHILDREN															
6-9	(1.2)	(5.6)	(3.0)	(5.0)	(3.9)	(3.5)	(4.5)	(3.9)	(0.4)	(4.0)	(0.2)	(1.4)	(0.1)	(3.7)	35
10-11	(1.7)	(5.5)	(3.8)	(4.2)	(3.4)	(3.4)	(4.7)	(3.9)	(1.1)	(5.5)	(0.1)	(2.7)	(0.4)	(4.5)	35
12-15	0.6	4.6	3.0	5.2	4.5	4.1	6.2	5.2	1.1	5.6	0.8	2.9	0.5	4.4	79
16-19	0.3	4.0	2.2	5.3	4.7	4.2	6.4	5.2	1.5	5.5	1.0	3.1	0.4	4.3	70
20-23	0.6	3.8	2.1	5.3	4.7	3.4	6.4	5.4	1.0	5.9	1.2	3.2	0.5	5.1	87
24-35	0.2	2.4	1.9	5.2	4.4	3.4	6.0	5.1	1.5	6.0	1.1	3.5	0.8	5.2	264
Total	0.5	3.6	2.4	5.1	4.3	3.5	5.8	4.9	1.2	5.6	0.9	3.0	0.6	4.7	590

Note: Breastfeeding status refers to a 24-hour recall period (the day and night preceding the interview). Figures in parentheses are based on 25-49 unweighted cases.

11.2   IODINE INTAKE

Insufficient iodine in the diet can lead to serious health deficiencies. Cooking salt in households was tested for the presence of iodine in the ADHS, using salt testing kits supplied by UNICEF. Salt that contains at least 15 parts per million (ppm) of iodine is considered adequately iodized. Salt testing was conducted in almost every household in the survey (99.9 percent).

Table 11.8 shows that most Armenian households have adequately iodized salt (84 percent). There is, however, considerable variation by region, ranging from a high of 95 percent of households in Ararat and Armavir to 59 percent of households in Tavush. This variation in iodine content is greater than expected given that there is only one salt plant in Armenia and the plant is reported to iodize salt and routinely check for adequate iodization. Based on the reports of interviewers, many respondents who lived in households with inadequately iodized salt showed packages of salt imported from other countries, such as the Ukraine and Iran. It is possible then that salt produced outside of Armenia (which tends to be cheaper) is more widely available and affordable in certain regions. Furthermore, exposure of iodized salt can also diminish the iodine content.

Table 11.8 Iodization of household salt

Percent distribution of households by level of iodine in salt (parts per million), according to background characteristics, Armenia 2000

Background characteristic	Level of iodine in household salt (ppm)				Total	Number of households tested [1]
	0	<15	15+	Missing		
Residence						
Urban	6.9	6.9	85.5	0.7	100.0	3,630
Rural	13.7	5.3	80.5	0.5	100.0	2,346
Region						
Yerevan	1.1	8.5	89.7	0.8	100.0	1,944
Aragatsotn	6.4	1.9	90.0	1.7	100.0	248
Ararat	2.1	2.5	95.2	0.2	100.0	580
Armavir	3.3	1.6	94.9	0.2	100.0	496
Gegharkunik	16.2	7.5	76.0	0.2	100.0	505
Lori	24.3	5.2	69.1	1.4	100.0	519
Kotayk	7.2	5.0	87.0	0.8	100.0	413
Shirak	27.3	4.5	68.2	0.0	100.0	602
Syunik	7.7	2.2	89.5	0.7	100.0	258
Vayots Dzor	10.9	12.5	76.1	0.5	100.0	111
Tavush	24.2	16.1	59.1	0.6	100.0	300
Total	9.6	6.3	83.6	0.6	100.0	5,976

[1] Ninety-nine percent of households were tested.

Table 11.9 shows that 83 percent of all children under three years of age are living in households where there is adequately iodized salt. Regional variation is similar to that found in Table 11.8.

11.3 MICRONUTRIENT INTAKE

A mother's nutritional status during pregnancy is important both for the child's intrauterine development and for protection against maternal morbidity and mortality. Night blindness is an indicator of severe vitamin A deficiency, and pregnant women are especially prone to suffer from it. Table 11.10 shows that less than 2 percent of women with a recent birth report that they experienced night blindness. After adjusting for women who also reported vision problems during the day, an estimated 1 percent of women suffered from night blindness. The small percentages make it impossible to examine variation among subgroups of Armenia's population.

Iron-deficiency anemia is a major threat to maternal health; it contributes to low birth weight, lowered resistance to infection, poor cognitive development, and decreased work capacity. Furthermore, anemia increases morbidity from infections because it adversely affects the body's immune response. The ADHS asked women who had a recent birth whether they received or purchased any iron tablets during the last pregnancy.   If so, the woman was asked to report the number of days that the tablets were actually taken during that pregnancy. Table 11.10 shows that less than 2 percent of women reported taking iron supplements on at least 90 days during the pregnancy, which is the recommended supplementation.

Table 11.9 Children with access to iodized salt

Percentage of children under three years of age living in a household with adequately iodized household salt (15+ parts per million), by background characteristics, Armenia 2000

Background characteristic	Iodine in household salt 15+ ppm	Number of children
Child's age (months)		
<7	80.7	167
7-11	83.0	132
12-17	83.9	156
18-23	85.8	143
24-35	81.8	281
Child's sex		
Male	82.8	501
Female	82.8	378
Birth order		
1	83.9	363
2-3	82.7	433
4+	78.3	84
Mother's age		
15-19	80.1	60
20-24	81.5	395
25-29	88.0	258
30-34	78.5	94
35-39	77.0	49
40-44	(83.4)	22
45-49	*	1
Residence		
Urban	86.4	453
Rural	79.0	427
Region		
Yerevan	89.6	252
Aragatsotn	81.0	46
Ararat	96.0	114
Armavir	97.2	79
Gegharkunik	63.5	103
Lori	74.3	84
Kotayk	(87.5)	45
Shirak	(72.9)	60
Syunik	89.8	32
Vayots Dzor	71.4	19
Tavush	56.6	46
Total	82.8	880

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Figures in parentheses are based on 25-49 unweighted cases.

Table 11.10 Micronutrient intake among mothers

Percentage of women who gave birth during the three years preceding the survey who suffered from night blindness during the pregnancy and who took iron supplements, by background characteristics, Armenia 2000

Background characteristic	Mother was night blind during pregnancy	Mother was night blind during pregnancy (adjusted)[1]	Mother took iron on 90+ days during pregnancy	Number of mothers
Birth order				
1	1.3	1.3	1.9	306
2-3	1.4	0.5	1.1	421
4+	1.7	1.7	1.4	82
Mother's age				
15-19	0.0	0.0	0.0	51
20-24	1.1	0.8	1.1	350
25-29	1.6	1.0	1.7	247
30-34	4.2	2.6	2.0	90
35-39	0.0	0.0	0.0	48
40-44	(0.0)	(0.0)	(7.7)	22
45-49	*	*	*	1
Residence				
Urban	1.9	1.3	1.4	427
Rural	0.8	0.6	1.5	382
Region				
Yerevan	2.9	1.7	0.6	241
Aragatsotn	0.0	0.0	1.4	42
Ararat	0.0	0.0	1.1	100
Armavir	3.0	3.0	0.0	74
Gegharkunik	2.2	1.1	0.0	89
Lori	0.0	0.0	3.1	76
Kotayk	(0.0)	(0.0)	(2.6)	44
Shirak	(0.0)	(0.0)	(7.0)	53
Syunik	0.0	0.0	1.9	29
Vayots Dzor	1.4	1.4	1.4	18
Tavush	0.0	0.0	1.3	43
Total	1.4	0.9	1.4	809

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Figures in parentheses are based on 25-49 unweighted cases.
[1] Excludes women who reported night blindness and difficulty with vision during the day

11.4 ANEMIA

Anemia is a condition characterized by a decrease in the concentration of hemoglobin in the blood. Hemoglobin is necessary for transporting oxygen to tissues and organs in the body. The reduction in oxygen available to organs and tissues when hemoglobin levels are low is responsible for many of the symptoms experienced by anemic persons. The consequences of anemia include general body weakness, frequent tiredness, and lowered resistance to disease. Anemia can be a particularly serious problem for pregnant women, leading to premature delivery and low birth weight. It is of concern in children since anemia is associated with impaired mental and physical development. Overall, morbidity and mortality risks increase for individuals suffering from anemia.

Determining anemia levels among women and their children under five years of age was one component of the ADHS. Anemia levels were determined by measuring the level of hemoglobin in the blood, a decreased concentration of which characterizes anemia. For hemoglobin measurement, capillary blood was taken from the finger using HemoCue safety lancets (i.e., sterile, disposable instruments that allow a relatively painless skin puncture). Hemoglobin was measured in the blood using the HemoCue system. As described in Chapter 1, medically trained personnel assigned to each of the ADHS teams conducted the testing.

Prior to participating in the study, each respondent was informed of her right not to participate in the anemia testing and was asked to sign a consent form giving permission for the collection of a blood droplet from her and her children. Ninety-five percent of eligible women participated in the hemoglobin measurement. Out of 1,447 eligible children (age 6-59 months), hemoglobin measurements were obtained from 1,334 (93 percent).

Levels of anemia were classified as severe, moderate, and mild based on the hemoglobin concentration in the blood and according to criteria developed by the World Health Organization (DeMaeyer et al., 1989). Because hemoglobin levels vary by altitude, the measurements presented here have been adjusted based on altitude measurements taken in each cluster.

Table 11.11 presents the anemia rates for children under five years of age. Twenty-four percent of children suffer from anemia; 10 percent have moderate anemia, and less than 1 percent have severe anemia. There are substantial differences in anemia rates among children by residence. The prevalence of anemia among children living in rural areas is twice as high as among children living in urban areas (33 percent versus 16 percent). The prevalence of anemia among children living in the regions ranges from a low of 11 percent in Vayots Dzor and Kotayk to a high of 39 percent in Tavush (Figure11.2). Table 11.11 also shows that as the educational level of mothers increases, their children are less likely to suffer from anemia.
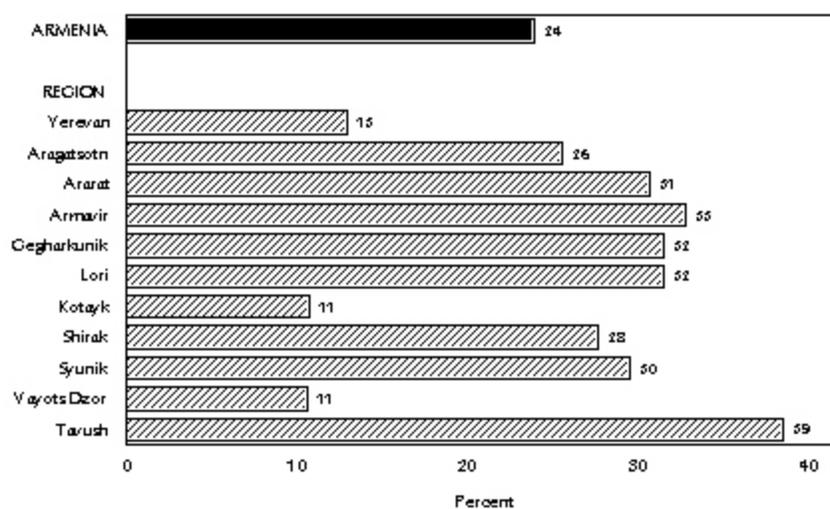
Table 11.11   Prevalence of anemia in children

Percentage of children age 6-59 months with anemia, by background characteristics, Armenia 2000

Background characteristic	Percentage of children with anemia				Number of children
	Any anemia	Severe (below 7.0 g/dl)	Moderate (7.0-9.9 g/dl)	Mild (10.0-10.9 g/dl)	
Child's age (months)					
6-11	48.2	0.0	19.0	29.2	136
12-23	39.5	1.4	18.8	19.3	281
24-35	21.4	0.2	7.5	13.7	262
36-47	15.5	0.2	5.8	9.5	314
48-59	11.2	0.0	3.3	7.9	341
Child's sex					
Male	25.3	0.5	9.6	15.2	756
Female	22.2	0.2	9.6	12.4	579
Birth order					
1	23.2	0.5	9.2	13.5	528
2-3	24.5	0.2	9.8	14.5	684
4+	24.0	0.5	10.3	13.3	123
Birth interval					
First birth	23.3	0.5	9.4	13.4	530
<24 months	25.6	0.2	10.8	14.6	274
24-47 months	24.5	0.0	8.7	15.9	286
48+ months	22.7	0.7	9.8	12.3	243
Residence					
Urban	15.6	0.2	4.8	10.6	684
Rural	32.8	0.6	14.6	17.5	650
Region					
Yerevan	12.9	0.0	4.6	8.2	385
Aragatsotn	25.5	1.4	8.5	15.6	81
Ararat	30.7	0.0	15.7	15.0	159
Armavir	32.8	0.8	16.0	16.0	140
Gegharkunik	31.5	0.0	13.7	17.7	123
Lori	31.5	0.0	4.3	27.2	110
Kotayk	10.7	1.2	3.6	6.0	95
Shirak	27.6	0.0	13.2	14.5	94
Syunik	29.5	2.3	9.1	18.2	48
Vayots Dzor	10.6	0.0	1.9	8.7	26
Tavush	38.5	0.8	18.5	19.2	73
Mother's education					
Primary/middle	38.3	0.5	20.8	17.0	114
Secondary	24.3	0.3	9.9	14.1	530
Secondary-special	23.7	0.4	8.4	14.9	459
Higher	16.7	0.5	5.8	10.4	231
Total	23.9	0.4	9.6	14.0	1,334

Note: Prevalence is adjusted for altitude level using a formula in Dirren et al., 1994.

Figure 11.2 Prevalence of Anemia in Children Age 6-59 Months by Region

Armenia DHS 2000

Table 11.12 presents the anemia rates for women. Twelve percent of Armenian women suffer from some degree of anemia; 2 percent have moderate anemia, and less than 1 percent have severe anemia. The prevalence of moderate anemia is higher among older women than among younger women. Higher rates of anemia are found among women residing in rural areas (17 percent) than among women residing in urban areas (10 percent). Six percent of women living in Yerevan have some degree of anemia. The prevalence in the other regions ranges from a low of 10 percent in Vayots Dzor to a high of 20 percent in Syunik. Anemia rates also vary by educational background: women with higher education have the lowest rates of anemia (9 percent versus 13 to14 percent).

Table 11.13 shows that there is no significant relationship between the prevalence of anemia in mothers and prevalence of anemia in their children.

Because rates of anemia vary according to the season, these results pertain only to the period of October through December when the fieldwork took place. It should be noted that because fieldwork followed the harvest season, it is possible that the anemia rates presented here are lower than at other times during the year. The results of the ADHS, therefore, are particularly striking when compared with the findings of a survey conducted in May 1998. According to this previous survey, only 12 percent of Armenian children age 6-59 months had mild or moderate anemia (Branca et al., 1998). A comparison of the data from these two surveys would suggest that anemia rates among children may have doubled over the last several years.

Table 11.12   Prevalence of anemia in women

Percentage of women age 15-49 with anemia, by background characteristics, Armenia 2000

Background characteristic	Percentage of women with anemia				Number of women
	Any anemia	Severe (below 7.0 g/dl)	Moderate (7.0-9.9 g/dl)	Mild (10.0-11.9 g/dl)	
Age					
15-19	8.9	0.0	0.9	8.0	1,103
20-24	11.3	0.2	1.7	9.4	952
25-29	14.4	0.2	1.7	12.5	730
30-34	10.9	0.0	1.2	9.7	739
35-39	14.7	0.1	2.3	12.2	922
40-44	13.1	0.6	3.1	9.4	902
45-49	15.0	0.6	3.4	11.0	789
Parity					
No births	9.2	0.1	1.3	7.8	1,984
1	11.3	0.5	2.0	8.8	613
2-3	13.9	0.2	2.2	11.5	2,907
4+	17.1	0.8	3.1	13.1	634
Pregnancy and breastfeeding					
Pregnant	12.0	0.0	4.6	7.4	169
Breastfeeding only	12.9	0.4	1.8	10.7	274
Neither	12.4	0.2	1.9	10.3	5,694
Using IUD					
Yes	15.5	0.0	1.3	14.2	375
No	12.2	0.3	2.0	9.9	5,762
Residence					
Urban	9.9	0.2	1.6	8.1	3,762
Rural	16.5	0.3	2.6	13.6	2,376
Region					
Yerevan	5.6	0.1	0.9	4.6	2,093
Aragatsotn	11.7	0.2	1.5	10.0	277
Ararat	16.3	0.4	2.7	13.3	601
Armavir	18.0	0.2	2.3	15.6	546
Gegharkunik	17.3	0.2	3.1	14.0	411
Lori	17.9	0.0	3.0	14.9	481
Kotayk	10.6	0.7	2.8	7.2	490
Shirak	17.2	0.2	1.4	15.5	608
Syunik	20.2	0.6	3.9	15.7	256
Vayots Dzor	10.2	0.2	3.9	6.0	106
Tavush	15.6	0.4	3.3	11.9	269
Education					
Primary/middle	14.4	0.4	2.4	11.6	562
Secondary	13.0	0.4	2.0	10.6	2,232
Secondary-special	13.3	0.1	1.9	11.3	2,196
Higher	8.8	0.2	1.9	6.7	1,146
Total	12.4	0.3	2.0	10.2	6,137

Note: Prevalence is adjusted for altitude using a formula in Dirren et al., 1994.

Table 11.13   Prevalence of anemia in children with anemic mothers

Percent distribution of children age 6-59 months by anemia status, according to severity of anemia in the mother, Armenia 2000

Severity of anemia of mother	Percentage of children with anemia			Percentage of children who are not anemic	Total	Number of children[1]
	Severe	Moderate	Mild			
Mother anemic						
Severe	*	*	*	*	*	5
Moderate	(0.0)	(11.1)	(25.7)	(63.2)	(100.0)	26
Mild	0.4	10.7	16.2	72.7	100.0	155
Mother not anemic	0.4	9.3	13.6	76.8	100.0	1,143
Total	0.4	9.5	14.0	76.1	100.0	1,328

Note: Prevalence is adjusted for altitude to sea level using formula of Dirren et al., 1994. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Figures in parentheses are based on 25-49 unweighted cases.
[1] Children with hemoglobin data born 6-59 months before the survey with mothers with hemoglobin data

11.5   NUTRITIONAL STATUS OF CHILDREN

Anthropometry provides one of the most important indicators of children's nutritional status. Height and weight measurements were obtained for respondents' children who were born in the five-year period preceding the survey.[1] The data on height and weight were used to compute three summary indices of nutritional status: height-for-age, weight-for-height, and weight-for-age. These indices indicate children's susceptibility to diseases and their chances of survival.

The nutritional indices are expressed as standardized scores (Z-scores) or standard deviation units from the median for the international reference population recommended by the World Health Organization. Children who fall more than two standard deviations below the reference median are regarded as undernourished, while those who fall more than three standard deviations below the reference median are considered severely undernourished.

In the survey, children born to female respondents since January 1995 were eligible for height and weight measurements. Of the 1,596 children eligible for measurement (i.e., age 0-59 months at the time of the survey), 1,461 (92 percent) were measured and had consistent results. Table 11.14 shows the nutritional status for these children by selected demographic and background characteristics.

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[1] Height was measured standing up for children age two years and above and lying down for children below two years, using specially designed portable measuring boards (Shorr Boards). Weight was measured using electronic Seca scales.

Table 11.14 Nutritional status of children

Percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status: height-for-age, weight-for-height, and weight-for-age, by demographic and background characteristics, Armenia 2000

Characteristic	Height-for-age (stunted)			Weight-for-height (wasted)			Weight-for-age (underweight)			
	Percent-age below -3 SD	Percent-age below -2 SD[1]	Mean Z-score (SD)	Percent-age below -3 SD	Percent-age below -2 SD[1]	Mean Z-score (SD)	Percent-age below -3 SD	Percent-age below -2 SD[1]	Mean Z-score (SD)	Number of children
Child's age (months)										
<6	0.0	4.0	-0.1	0.0	3.7	0.5	0.4	1.6	0.4	132
6-11	1.8	5.9	-0.1	0.4	2.5	0.6	0.2	2.0	0.4	135
12-23	1.2	15.2	-0.7	0.8	3.7	0.6	0.4	2.8	0.0	276
24-35	1.9	11.6	-0.4	0.5	1.1	0.5	0.0	3.0	0.1	262
36-47	4.9	16.1	-0.9	0.0	0.4	0.6	0.4	2.3	-0.1	318
48-59	3.2	15.7	-0.9	0.0	1.9	0.5	0.0	3.0	-0.2	340
Child's sex										
Male	3.0	12.3	-0.7	0.4	2.2	0.6	0.2	2.4	0.0	837
Female	2.0	14.0	-0.6	0.1	1.7	0.5	0.2	2.8	0.0	626
Birth order										
1	1.7	9.6	-0.6	0.3	1.3	0.6	0.0	1.6	0.1	577
2-3	2.8	13.9	-0.7	0.3	2.5	0.6	0.4	2.7	0.0	750
4+	4.7	22.6	-1.0	0.0	1.7	0.4	0.0	6.1	-0.3	136
Birth interval										
First birth	1.7	9.6	-0.6	0.3	1.3	0.6	0.0	1.6	0.1	580
<24 months	3.0	15.9	-0.9	0.0	1.3	0.6	0.6	3.4	-0.1	299
24-47 months	3.4	16.1	-0.6	0.4	3.6	0.5	0.1	2.8	-0.0	318
48+ months	2.9	13.5	-0.6	0.5	2.3	0.5	0.4	3.5	-0.0	266
Residence										
Urban	1.6	10.1	-0.5	0.5	2.2	0.6	0.2	2.4	0.1	750
Rural	3.6	16.0	-0.8	0.1	1.7	0.5	0.3	2.8	-0.1	713
Region										
Yerevan	0.7	7.5	-0.3	0.3	2.3	0.6	0.0	0.7	0.2	422
Aragatsotn	0.7	8.8	-0.3	0.7	2.7	0.3	0.7	2.0	0.0	85
Ararat	2.7	15.3	-0.8	0.0	0.0	0.4	0.0	3.3	-0.2	171
Armavir	1.4	8.7	-0.6	0.0	0.0	0.6	0.7	1.4	0.1	154
Gegharkunik	8.6	32.1	-1.3	0.0	1.4	0.6	0.0	3.6	-0.3	139
Lori	5.7	12.3	-0.7	0.0	0.9	0.8	0.0	0.0	0.3	127
Kotayk	1.2	8.1	-0.5	2.3	10.5	0.0	1.2	9.3	-0.4	98
Shirak	3.5	22.4	-1.1	0.0	2.4	0.8	0.0	5.9	-0.1	106
Syunik	4.1	15.5	-0.8	0.0	0.0	0.7	0.0	5.2	0.0	53
Vayots Dzor	1.7	11.1	-0.7	0.0	1.7	0.5	0.9	4.3	-0.1	29
Tavush	0.7	10.4	-0.7	0.0	0.7	0.6	0.0	1.4	-0.0	81
Mother's education										
Primary/middle	4.8	21.0	-1.0	0.0	1.9	0.4	0.0	6.5	-0.3	126
Secondary	2.7	13.7	-0.7	0.0	2.3	0.5	0.3	2.4	-0.0	588
Secondary-special	2.7	12.8	-0.6	0.7	1.7	0.6	0.2	2.5	0.0	493
Higher	0.7	7.9	-0.3	0.2	1.7	0.6	0.0	1.2	0.2	255
Total	2.5	13.0	-0.7	0.3	2.0	0.6	0.2	2.6	0.0	1,463

Note: Table is based on children born 0-59 months preceding the survey whose mothers were interviewed. Each of the indices is expressed in standard deviation (SD) units from the median of the NCHS/CDC/WHO International Reference Population. The percentage of children who are more than three or more than two standard deviations below (i.e., away in the negative direction) the median of the International Reference Population (-3 SD and -2 SD) are shown according to demographic characteristics. Table is based on children with valid dates of birth (month and year) and valid measurement of both height and weight.
[1] Includes children who are below -3 standard deviations from the International Reference Population median

Children whose height-for-age is below minus two standard deviations from the median of the reference population are considered stunted or short for their age. This condition reflects chronic malnutrition. Overall, 13 percent of children under age five are stunted; 3 percent are severely stunted. In general, children of higher birth orders, children residing in rural areas, and children born to mothers with less education are more likely to be stunted. For example, the children of mothers with a primary/middle school education are almost three times as likely as the children of mothers with a higher education to be stunted (21 percent versus 8 percent). There is significant regional variation in the prevalence of stunted children ranging from a low of 8 percent in Kotayk and Yerevan to a high of 32 percent in Gegharkunik (Figure 11.3).

Children whose weight-for-height is below minus two standard deviations from the median of the reference population are considered wasted (or thin). This condition reflects an acute or recent nutritional deficit. Children whose weight-for-age is below minus two standard deviations from the median of the reference population are considered underweight. The weight-for-age index does not distinguish between chronic malnutrition (stunting) and acute malnutrition (wasting). A child can be underweight for age because of stunting, because of wasting, or because of both stunting and wasting. Weight-for-age is a good overall indicator of a population's general health.

Overall, 2 percent of children are wasted and 3 percent are underweight, signifying that Armenian children are no more likely to be wasted or underweight than the international reference population. The prevalence of wasted and underweight children does vary by region, however, and levels are markedly high in Kotayk, where 11 percent of the children are wasted and 9 percent are underweight. Children of higher birth orders (four and higher) are significantly more likely to be underweight than first-born children (6 percent versus 2 percent). Children of mothers with a primary/middle education are also more likely to be underweight than children of mothers with higher education (1 percent).

Figure 11.3 Prevalence of Stunting by Age of Child and Region
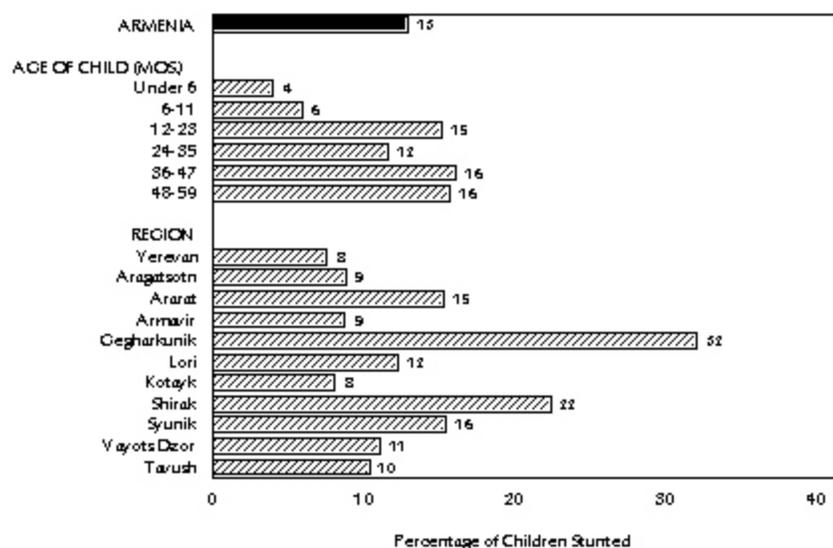
Armenia DHS 2000

Information about children's nutritional status at the national level is available from another recent survey. According to a survey conducted in 1998, 12 percent of children under five years of age were stunted (versus 13 percent in ADHS) and 4 percent of children were wasted (versus 2 percent in ADHS) (Branca et al., 1998). When confidence intervals are considered, these figures do not vary significantly from the ADHS.

11.6 NUTRITIONAL STATUS OF WOMEN

The ADHS also collected anthropometric data from all women age 15-49. Women's nutritional status is important both as an indicator of overall health and as a predictor of pregnancy outcome for both mother and child. Two indices of women's nutritional status are presented in Table 11.15: height and body mass index (BMI).

Maternal height is a measure of past nutritional status and reflects in part the cumulative effect of social and economic outcomes on access to nutritional foods during childhood and adolescence. It can be used to predict the risks associated with difficult deliveries since small stature is often associated with small pelvis size and a greater likelihood of obstructed labor. Short stature is also correlated with low birth weight in infants, high risk of stillbirths, and high rates of miscarriage. The height below which a woman is considered to be at nutritional risk is in the range of 140 to 150 centimeters. In the ADHS, 96 percent of eligible women were measured. The mean height of Armenian women is 158 centimeters; only 1 percent of women are below 145 centimeters. The mean height varies little by background characteristics. Short stature appears to be the most prevalent in Vayots Dzor, however, where 5 percent of women are below 145 centimeters tall.

The BMI, which utilizes both height and weight and provides a better measure of thinness and obesity than weight alone, is defined as weight in kilograms divided by the square of the height in meters (kg/m^2). For the BMI, a cutoff of 18.5 has been recommended for indicating chronic energy deficiency among nonpregnant women. To avoid bias in the measurement of women's nutritional status, pregnant women and women who had given birth in the two months preceding the survey were excluded from the calculation of weight and body mass measures. Out of the remaining 6,210 eligible women, 96 percent were measured. Table 11.15 shows that less than 4 percent of Armenian women are undernourished or have a low BMI.

The BMI index can also be used to evaluate the percentage of the population of women who are overweight and obese. A cutoff point of 25.0 has been recommended for defining "overweight," while 30.0 is used as the cutoff point for defining "obese." According the findings of the ADHS, approximately four in ten Armenian women weigh more than they should: 27 percent are overweight and 14 percent are obese. There is a strong relationship between age and high scores on the BMI index. For example, only 2 percent of women age 15-19 are obese, as opposed to one-third (33 percent) of women age 45-49. More important, more than half of all women age 35 and older are either overweight or obese; this indicates that the majority of older women do not have a healthy lifestyle and presents a serious public health challenge for Armenia.

Table 11.15 Nutritional status of women by background characteristics

Among women age 15-49, mean height and percentage under 145 cm, mean body mass index (BMI), and percent distribution of BMIs, mean ADHS Z-score, and percentage wasted, by background characteristics, Armenia 2000

Background characteristic	Mean height in cm	Percent-age below 145 cm	Number of women	Mean BMI	<18.5 (low)	18.5-24.9 (normal)	25.0-29.9 (over-weight)	30.0+ (obese)	Total	Number of women
Age										
15-19	158.1	1.3	1,106	22.3	6.4	77.9	13.4	2.2	100.0	1,080
20-24	158.2	1.0	963	22.8	6.7	71.9	18.1	3.3	100.0	871
25-29	157.9	1.8	735	23.7	4.3	64.9	24.2	6.6	100.0	686
30-34	157.6	0.4	739	24.8	3.3	54.8	29.2	12.6	100.0	711
35-39	157.5	1.3	922	26.0	1.3	46.4	35.5	16.9	100.0	914
40-44	157.2	1.2	910	27.3	0.6	35.1	37.8	26.5	100.0	907
45-49	157.4	1.0	791	28.0	1.4	29.4	36.6	32.6	100.0	791
Residence										
Urban	158.5	0.8	3,783	24.8	4.1	55.0	27.5	13.3	100.0	3,698
Rural	156.5	1.7	2,383	25.1	2.6	54.9	27.1	15.3	100.0	2,264
Region										
Yerevan	159.1	0.9	2,103	24.6	4.3	57.3	25.8	12.6	100.0	2,061
Aragatsotn	156.9	1.5	278	24.8	2.9	56.3	27.5	13.4	100.0	263
Ararat	156.3	1.7	603	25.4	3.2	52.1	24.4	20.4	100.0	570
Armavir	157.3	0.4	550	25.7	3.0	49.7	28.5	18.8	100.0	522
Gegharkunik	156.9	2.6	415	24.5	3.0	61.1	23.7	12.2	100.0	397
Lori	157.0	1.2	479	24.8	4.6	51.2	30.7	13.6	100.0	467
Kotayk	156.6	0.9	493	25.4	3.3	50.2	30.0	16.5	100.0	481
Shirak	158.8	0.0	609	24.7	1.9	57.1	34.2	6.7	100.0	592
Syunik	155.7	2.3	258	25.1	4.0	52.6	26.4	17.0	100.0	249
Vayots Dzor	155.4	4.8	106	24.8	2.4	59.4	22.9	15.2	100.0	102
Tavush	156.0	1.4	273	25.3	2.6	54.3	26.8	16.2	100.0	259
Education										
Primary/middle	156.9	1.2	566	24.1	5.8	60.9	20.9	12.3	100.0	550
Secondary	157.3	1.1	2,244	25.0	4.0	54.7	26.4	14.9	100.0	2,157
Secondary-special	157.5	1.4	2,206	25.1	3.1	52.7	29.2	15.0	100.0	2,143
Higher	159.2	0.8	1,150	24.8	2.3	57.0	29.1	11.6	100.0	1,112
Total	157.7	1.1	6,166	24.9	3.5	55.0	27.4	14.1	100.0	5,962

Weight-for-height[1]

[1] Excludes pregnant women and women with a birth in the preceding 2 months