# INFANT AND CHILD MORTALITY 9

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## 9.1 BACKGROUND

This chapter presents information on mortality among children under five years of age. The rates shown provide information on the levels and trends in mortality and mortality differentials between population subgroups. Mortality differentials are useful because they identify population subgroups exposed to elevated risks of mortality.

The mortality rates presented in this chapter are expressed as deaths per 1,000 live births, except in the case of child mortality, which is expressed as deaths per 1,000 children surviving to age one. Rates are presented for the following age intervals:

- Neonatal mortality (NN): the probability of dying within the first month of life
- Postneonatal mortality (PNN): the difference between infant and neonatal mortality
- Infant mortality (${}_1q_0$): the probability of dying between birth and exact age one
- Child mortality (${}_4q_1$): the probability of dying between exact ages one and five
- Under-five mortality (${}_5q_0$): the probability of dying between birth and exact age five.

The questionnaire for the ADHS included a reproductive history in which questions were asked about each of a woman's pregnancies. Respondents were asked to report the outcome of each pregnancy in terms of standard international definitions. *Live birth* was defined as any birth, irrespective of the duration of pregnancy, that after separation from the mother, showed any sign of life (for example, breathing, beating of the heart, or movement of voluntary muscles). *Infant death* was defined as the death of a child under one year of age (WHO, 1993).

For each live birth reported in the pregnancy history, information was collected on the date of birth (month and year), sex, survivorship, and current age (for surviving children) or age at death (for deceased children). Thus, respondents were asked to report about events that occurred throughout their reproductive lives. For older respondents, women age 40 and over, this means events that occurred as long as 25 to 30 years ago. Mortality rates for specific periods preceding the survey were calculated using direct estimation procedures.

The data collected in the survey and the mortality estimates based on those data are applicable to the population resident in Armenia at the time of the survey. In recent years, there have been significant migration flows into and out of Armenia, which were associated with the hostilities between Armenia and Azerbaijan in the early 1990s. The mortality experience of out-migrants is not reflected in the survey data, while that of in-migrants is. Although the net effect of migration on the national estimates of mortality is probably small, this factor must be recognized so that the mortality estimates are properly interpreted.

## 9.2 Assessment of Data Quality

The accuracy of mortality estimates from the ADHS depends on two factors: non-sampling error (i.e., the completeness and accuracy with which births and deaths are reported) and sampling variability of the estimates. Non-sampling error is considered in this section. Sampling variability is discussed in the next section of this chapter.

The most likely source of non-sampling error in a survey is the underreporting of deceased children. It is well established that underreporting of deceased children is most likely a) for time periods more remote from the survey date and b) for deaths that occured in early infancy (i.e., in the neonatal period). Respondent underreporting of events that occurred in the more distant past is due either to forgetfulness or to conscious avoidance of recalling the tragedy of losing a child. In this report, the focus is on mortality rates for the 15-year period prior to the survey. Rates for earlier time periods are not reported. This eliminates showing mortality estimates for the time periods most susceptible to respondent forgetfulness. Of course, this does not ensure that events occurring in the 15-year period prior to the survey are fully reported.

In the case of underreporting of early infant deaths, the data for the 15-year period prior to the survey can be tested to determine whether underreporting occurred to a significant degree. Significant underreporting would result in an unacceptably low value for the ratio of neonatal to infant mortality (United Nations, 1982). The test consists of comparing the value of the neonatal/infant mortality ratios from the survey with values for national populations known to have relatively complete infant mortality data. In countries at a level of mortality similar to that estimated for Armenia, the value of this ratio is typically greater than 0.50.[1] Neonatal and infant mortality rates from the ADHS are shown in Table 9.1. The neonatal to infant mortality ratio for the periods 1986-1990, 1991-1995, and 1996-2000 are 0.54, 0.63, and 0.54, respectively. All of these values exceed 0.50. Accordingly, this test of the data has not found significant under-reporting of neonatal deaths for the time periods 1986-1990, 1991-1995, or 1996-2000.

## 9.3 Levels and Trends in Childhood Mortality

Table 9.1 shows infant and child mortality estimates based on data from the ADHS. For the five years immediately preceding the survey (1996-2000), the infant mortality estimate was 36 per 1,000 live births.[2] The estimates of neonatal mortality and postneonatal mortality were 20 and 17 per 1,000 births, respectively. The estimate of child mortality (age one to four) was much lower: 3 per 1,000. The overall under-five mortality rate for the period was 39 per 1,000.

Trends in mortality over the fifteen-year period prior to the survey can also be examined from Table 9.1. The mortality estimates for the earliest two periods (1986-1990 and 1991-1995) indicate an increase in neonatal mortality (from 25 to 32 per 1,000) and a modest decline in postneonatal and child mortality (21 to 19 and 6 to 5 per 1,000, respectively). The under-five mortality estimates indicate an increase (from 51 to 55 per 1,000), all of which is attributable to the increase in neonatal mortality. Whether neonatal mortality actually increased between

[1] For example, see the neonatal and infant mortality rates for Austria (1959), Canada (1952), and Belgium (1956) in the *U.N. Demographic Yearbook, 1961* (Table 13) and Cuba (1968) and Puerto Rico (1965) in the *U.N. Demographic Yearbook, 1974* (Table 22).

[2] The survey estimate of infant mortality has a standard error of 5.4 per 1,000. Standard errors and 95 percent confidence intervals for mortality rates are shown in Appendix B.

Table 9.1 Early childhood mortality

Neonatal, postneonatal, infant, child, and under-five mortality rates for five-year periods preceding the survey, Armenia 2000

| Years preceding the survey | Approximate calendar year[1] | Neonatal mortality (NN) | Postneonatal mortality (PNN) | Infant mortality ($_1q_0$) | Child mortality ($_4q_1$) | Under-five mortality ($_5q_0$) |
|---|---|---|---|---|---|---|
| 0-4 | 1996-2000 | 19.5 | 16.7 | 36.1 | 3.0 | 39.0 |
| 5-9 | 1991-1995 | 31.6 | 18.9 | 50.5 | 4.8 | 55.0 |
| 10-14 | 1986-1990 | 24.6 | 20.9 | 45.6 | 5.8 | 51.1 |

Note: Postneonatal mortality is computed as the difference between the infant and the neonatal mortality.
[1] Because survey fieldwork was conducted from September to December 2000, the rates for the five-year period 1996-2000 actually apply to the calendar period from November 1995 to November 2000. This is similar for the other rates.

1986-1990 and 1991-1995, whether there was underreporting of neonatal deaths in the 1986-1990 period, or whether these differences were due to sampling variability cannot be definitively determined from these data. However, the early 1990s were a period of increasing social and economic problems that could have had an impact on mortality levels. The early 1990s witnessed the breakup of the Soviet Union and hostilities with Azerbaijan. The former resulted in the disappearance of the traditional markets for Armenia's industrial output, significant unemployment, and associated economic hardship. The latter resulted in the disruption of the country's primary source of oil and a sharp curtailment of electricity throughout the country.

Comparison of the estimated rates for the earliest and the most recent periods (1986-1990 and 1996-2000) indicates declining mortality. Infant mortality declined from 46 to 36 per 1,000 (21 percent), with both the neonatal and postneonatal rates declining to about the same degree (a little more than 20 percent). Child mortality declined from 6 to 3 per 1,000 (48 percent). And overall under-five mortality from 51 to 39 per 1,000 (24 percent). These estimates are compelling evidence of a significant mortality decline over the last fifteen years.

No doubt, many factors have contributed to the decline in mortality over the past 15 years. To some degree, the decline was probably hastened by Ministry of Health (MOH) programs initiated in 1994 in the case management of diarrhea and acute respiratory infection (ARI) as well as programs in support of breastfeeding. Those efforts are more likely to have had an impact on mortality rates for the late postneonatal ages (i.e., months 6-11) and for ages 1 through 5 than on mortality rates for the neonatal period (month 0) and for the early postneonatal period, (i.e, months 1-5). The survey data on age at death was reported by month of age for deaths under two years of age. So, although not shown in Table 9.1, mortality rates for the early and late subdivisions of the postneonatal period can be calculated, allowing a more detailed investigation of the age structure of the mortality decline. Between 1986-90 and 1996-00, the survey data indicate virtually no decline in the early postneonatal mortality rate (stable at 15 per 1,000) but a decline of about 50 percent in the late postneonatal mortality rate (6 to 3 per 1,000). Additionally, Table 9.1 indicates a substantial decline in child mortality over the period (48 percent). These estimates are subject to large sampling error; nevertheless, they indicate an age structure of mortality decline that is consistent with the expected impact of MOH intervention programs.

## 9.4 INFANT MORTALITY RATES FROM THE NSS AND THE ADHS

Armenia has a long history of demographic and health data collection—primarily through the use of national registration systems. In the case of births and infant deaths, the National Statistical Service collects the data through a system in which reports from local health officials—which primarily document events occurring in health facilities—are forwarded up the reporting hierarchy to the regional *(marz)* level and to the NSS and ultimately to the MOH. Official government statistics on infant mortality are published in the annual statistical reports of the NSS.

Prior to 1995, live births and infant deaths in Armenia were defined according to protocols established during the time of the former Soviet Union. The criteria for classifying pregnancy outcomes in the Soviet protocols differed from those recommended by the World Health Organization. The most important difference relates to pregnancies ending at a gestational age of less than 28 weeks. The Soviet protocols classify such pregnancies as miscarriages (even if signs of life are present at the time of delivery) unless the child survives for seven days.[3] Alternatively, WHO defines a birth showing any sign of life (i.e., breathing, beating of the heart, or movement of voluntary muscles) as a live birth, irrespective of the gestational age at delivery (WHO, 1993). There is also a difference for pregnancies terminating at 28 or more weeks of gestation. The Soviet system classifies such events as live births if the child breathes and as stillbirths if breathing is not evident at delivery. WHO defines these events as live births if any sign of life is present at delivery and otherwise as stillbirths.

In 1995, Armenia officially changed to the WHO definitions of live birth and infant death. However, it is thought that many maternity wards have been slow to convert to the new definitions and are still using the Soviet era definitions (GOA, UNICEF, and SCF, 1999).

Table 9.2 shows infant mortality rates reported by NSS and computed from survey data over the last fifteen years. For all three time periods shown, the survey estimates of infant mortality are more than twice the level of the NSS estimates (e.g., for 1996-2000, 36 versus 15). A thorough investigation of the differences between the two sets of estimates is beyond the scope of this report. However, it is clear that the differences arise about equally from the neonatal and postneonatal periods. While differences in the definitions of pregnancy outcomes can contribute to the differences in the neonatal estimates, they do not affect the postneonatal estimates. Under the reasonable assumption that survey respondents have not overreported postneonatal deaths, it appears that events are underreported in the registration system.

Figure 9.1 shows infant mortality time trends based on NSS and survey data. Two points should be noted. First, the time trend of the estimates from both sources is declining over the last fifteen years. This is strong evidence that child survivorship has increased over the period. And second, in each time period, NSS estimates are significantly lower than survey estimates.

[3] In cases in which the gestational age is unknown, fetuses that weigh less than 1,000 grams or measure less than 35 centimeters in length are considered premature and are classified as miscarriages.

Table 9.2 Comparison of infant mortality estimates

Neonatal, postneonatal and infant mortality rates for five-year periods preceding the survey, Armenia 2000

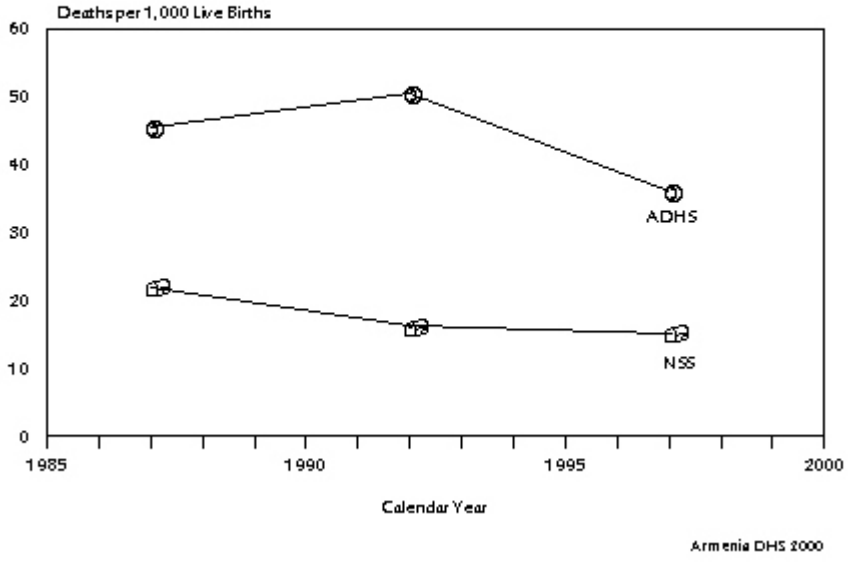
| Approximate calendar period [1] | Neonatal mortality | | Postneonatal mortality | | Infant mortality | |
|---|---|---|---|---|---|---|
| | NSS | ADHS | NSS | ADHS | NSS | ADHS |
| 1996-2000 | 9.1 | 19.5 | 6.2 | 16.7 | 15.3 | 36.1 |
| 1991-1995 | 8.0 | 31.6 | 8.5 | 18.9 | 16.3 | 50.5 |
| 1986-1990 | 9.1 | 24.6 | 13.0 | 20.9 | 22.1 | 45.6 |

Source: NSS of Republic of Armenia.

Note: Postneonatal mortality is computed as the difference between the infant and the neonatal mortality rates. Neonatal mortality estimates are based on deaths under 27 days for NSS rates and under one month for ADHS rates.

[1] Because survey fieldwork was conducted from September to December 2000, the rates for the five-year period 1996-2000 actually apply to the calendar period from November 1995 to November 2000. Similarly for the other rates.

*Figure 9.1* Trends in Infant Mortality Based on Rates from the National Statistical Service and the ADHS



## 9.5 SOCIOECONOMIC DIFFERENTIALS IN CHILDHOOD MORTALITY

Table 9.3 shows infant and child mortality estimates from the survey by socioeconomic variables (urban-rural and education). The estimated mortality rates are for the ten-year period preceding the survey. A ten-year period is used to calculate the rates for population subgroups to reduce sampling variability.

As is the case in most countries, mortality rates in infancy and early childhood are higher in rural areas than in urban areas. In terms of infant mortality, rural rates (53 per 1,000) exceed urban rates (36 per 1,000) by a factor of about 1.5. Most of this difference arises from the postneonatal rates. In the case of child mortality, rural rates (6.8 per 1,000) exceed urban rates (1.4 per 1,000) by a factor of about 5.0. In terms of under-five mortality, rural children have higher rates (59 per 1,000) than urban children (37 per 1,000) by a factor 1.6. There is little difference in the mortality risk of children in Yerevan and other urban areas.

As expected, mortality levels decline as the mother's education increases. Between education categories, the differentials are greater for postneonatal mortality and child mortality than for neonatal mortality. Overall, under-five mortality for women with some secondary school education (55 per 1,000) exceeds that for women with a higher education (22 per 1,000) by a factor of about 2.5.

Table 9.3 Early childhood mortality by background characteristics

Neonatal, postneonatal, infant, child, and under-five mortality rates for the ten-year period preceding the survey, by background characteristics, Armenia 2000

| Background characteristic | Neonatal mortality (NN) | Postneonatal mortality (PNN) | Infant mortality ($_1q_0$) | Child mortality ($_4q_1$) | Under-five mortality ($_5q_0$) |
|---|---|---|---|---|---|
| **Residence** | | | | | |
| Urban | 23.1 | 12.8 | 35.9 | 1.4 | 37.3 |
| Yerevan | 20.9 | 13.3 | 34.2 | 2.4 | 36.5 |
| Other urban | 25.7 | 12.2 | 37.9 | 0.3 | 38.1 |
| Rural | 29.5 | 23.3 | 52.7 | 6.8 | 59.2 |
| **Education** | | | | | |
| Primary | (47.5) | (35.2) | (82.6) | (7.1) | (89.1) |
| Secondary | 28.4 | 21.9 | 50.2 | 4.7 | 54.7 |
| Secondary-special | 23.9 | 16.5 | 40.4 | 4.2 | 44.4 |
| Higher | 17.1 | 4.2 | 21.3 | 0.4 | 21.7 |
| Total | 26.2 | 17.9 | 44.1 | 4.0 | 48.0 |

Note: Rates based on 250 to 499 exposed persons are in parentheses. Postneonatal mortality is computed as the difference between the infant and the neonatal mortality.

## 9.6 DEMOGRAPHIC DIFFERENTIALS IN CHILDHOOD MORTALITY

Table 9.4 shows the relationship between early childhood mortality and demographic variables. As was the case with the socioeconomic differentials, the rates are shown for the ten-year period preceding the survey.

As expected, mortality rates are generally higher for boys than for girls. There are significant differences in mortality risks associated with mother's age and birth order. The greatest differentials arise in the neonatal period for which the neonatal mortality rates of births to women 30-39 (44 per 1,000) and of order four and higher (54 per 1,000) are substantially greater than the neonatal mortality rate for all births (26 per 1,000).

In terms of the length of the preceding birth interval, mortality rates are decidedly lower for intervals of three years than for shorter or longer birth intervals. In terms of under-five mortality, births following an interval of three years (32 per 1,000) are at about half the risk of mortality as births following a shorter birth interval (60 or 73 per 1,000)

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Table 9.4 Early childhood mortality by demographic characteristics

Neonatal, postneonatal, infant, child, and under-five mortality rates for the ten-year period preceding the survey, by demographic characteristics, Armenia 2000

| Demographic characteristic | Neonatal mortality (NN) | Postneonatal mortality (PNN) | Infant mortality ($_1q_0$) | Child mortality ($_4q_1$) | Under-five mortality ($_5q_0$) |
|---|---|---|---|---|---|
| **Sex of child** | | | | | |
| Male | 29.4 | 16.7 | 46.1 | 4.9 | 50.7 |
| Female | 22.7 | 19.3 | 41.9 | 3.1 | 44.9 |
| **Mother's age at birth** | | | | | |
| <20 | 30.0 | 19.4 | 49.5 | 2.1 | 51.5 |
| 20-29 | 21.0 | 15.9 | 37.0 | 4.4 | 41.2 |
| 30-39 | 44.2 | 24.7 | 69.0 | 4.5 | 73.2 |
| **Birth order** | | | | | |
| 1 | 22.1 | 10.3 | 32.3 | 1.7 | 34.0 |
| 2-3 | 24.0 | 22.4 | 46.4 | 5.4 | 51.5 |
| 4+ | (53.7) | (23.6) | (77.3) | (5.0) | (81.9) |
| **Previous birth interval** | | | | | |
| <2 | 28.6 | 27.1 | 55.6 | 5.0 | 60.4 |
| 2 years | 36.6 | 30.8 | 67.4 | 5.8 | 72.9 |
| 3 years | (16.1) | (7.4) | (23.5) | (8.7) | (31.9) |
| 4 years or more | 26.8 | 17.6 | 44.5 | 3.8 | 48.1 |
| **Birth size** | | | | | |
| Small and very small | 72.7 | 20.8 | 93.4 | na | na |
| Average or larger | 7.5 | 18.1 | 25.6 | na | na |
| Total | 26.2 | 17.9 | 44.1 | 4.0 | 48.0 |

Note: Rates based on 250 to 499 exposed persons are in parentheses. Postneonatal mortality is computed as the difference between the infant and the neonatal mortality.
na = Not applicable

## 9.7 MORTALITY DIFFERENTIALS BY WOMEN'S STATUS

Several questions were included in the ADHS to develop indicators of women's status. These data provide insight into a woman's ability to act effectively in her own interest and in the interest of those who depend on her. It follows that if women—the primary caretakers of children—enjoy high status, the health and survival of their infants should be enhanced.

Respondents were asked about their participation in household decision making, about the circumstances under which a wife should be able to refuse having sex with her husband, and about whether there were any circumstances in which wife beating is justified. Indicators were developed that scale 1) a woman's participation in household decision making, 2) her right to refuse sexual relations, and 3) her acceptance of wife beating. The higher the scores on indicators 1 and 2, the higher a woman's status and the more empowered she is to care for her children. The higher the score on indicator 3, the lower a woman's status and the less empowered she is to care for her children.

Table 9.5 shows mortality rates for values of the indicators of women's status. For all three indicators, there is an association between increasing woman's status and decreasing levels of mortality.

Table 9.5 Early childhood mortality by women's status indicators

Neonatal, postneonatal, infant, child, and under-five mortality rates for the ten-year period preceding the survey, by women's status indicators, Armenia 2000

| Indicator of women's status | Neonatal mortality (NN) | Postneonatal mortality (PNN) | Infant mortality ($_1q_0$) | Child mortality ($_4q_1$) | Under-five mortality ($_5q_0$) |
|---|---|---|---|---|---|
| **Number of decisions with mother having final say** | | | | | |
| 0 | * | * | * | * | * |
| 1-2 | 27.1 | 19.7 | 46.8 | 2.7 | 49.4 |
| 3-4 | 25.2 | 22.0 | 47.2 | 3.6 | 50.6 |
| 5+ | 23.3 | 13.2 | 36.5 | 5.3 | 41.6 |
| **Number of reasons to refuse sexual relations** | | | | | |
| 0 | * | * | * | * | * |
| 1-2 | (51.4) | (30.1) | (81.5) | (5.4) | (86.5) |
| 3-4 | 22.6 | 17.0 | 39.6 | 3.7 | 43.1 |
| **Number of reasons to justify wife beating** | | | | | |
| 0 | 22.2 | 14.4 | 36.6 | 3.2 | 39.7 |
| 1-2 | 32.8 | 20.0 | 52.8 | 2.8 | 55.5 |
| 3-4 | 34.9 | 23.9 | 58.8 | 9.3 | 67.5 |
| 5+ | * | * | * | * | * |
| Total | 26.2 | 17.9 | 44.1 | 4.0 | 48.0 |

Note: Rates based on 250 to 499 exposed persons are in parentheses. Rates based on fewer than 250 exposed persons are not shown (*). Postneonatal mortality is computed as the difference between the infant and the neonatal mortality.

## 9.8 PERINATAL MORTALITY

Perinatal mortality rates indicate the level of mortality from the time of prenatal viability (i.e., the late fetal period beginning at the 28th week of gestation) through labor, delivery, and the early neonatal period of life (i.e., the 0-6 day period after birth). Pregnancies that terminate without signs of life after the 28th week of gestation are referred to as stillbirths. Stillbirths and early neonatal deaths share many of the same underlying causes leading to mortality (e.g., congenital malformations), and for this reason, these events are aggregated into the perinatal mortality rate.

Perinatal mortality rates are reported for the five-year period preceding the survey. It should be noted that data quality is always an issue when considering perinatal mortality rates, as both stillbirths and early neonatal deaths are susceptible to underreporting.

Table 9.6 Perinatal mortality

Number of stillbirths and early neonatal deaths, and the perinatal mortality rate for the five-year period preceding the survey, by background characteristics, Armenia 2000

| Background characteristic | Number of stillbirths[1] | Number of early neonatal deaths[2] | Perinatal mortality rate[3] | Number of pregnancies of 7 or more months duration |
|---|---|---|---|---|
| **Mother's age at birth** | | | | |
| <20 | 3.5 | 5.7 | (29.2) | 315 |
| 20-29 | 12.8 | 13.8 | 23.9 | 1,113 |
| 30-39 | 6.9 | 4.6 | 47.0 | 243 |
| 40-49 | 1.4 | 0.0 | * | 11 |
| **Previous pregnancy interval** | | | | |
| 1st pregnancy | 6.6 | 5.9 | 21.3 | 588 |
| <15 months | 8.1 | 6.4 | (55.2) | 262 |
| 15-38 months | 6.3 | 9.8 | 27.5 | 586 |
| 39+ months | 3.6 | 1.9 | 22.6 | 245 |
| **Residence** | | | | |
| Urban | 10.8 | 5.7 | 19.5 | 849 |
| Yerevan | 4.1 | 1.4 | (11.9) | 463 |
| Other urban | 6.7 | 4.4 | (28.7) | 386 |
| Rural | 13.7 | 18.3 | 38.5 | 833 |
| **Education** | | | | |
| Primary | 4.6 | 4.3 | * | 159 |
| Secondary | 12.5 | 13.3 | 37.9 | 681 |
| Secondary-special | 6.3 | 5.9 | 22.0 | 557 |
| Higher | 1.1 | 0.6 | (5.9) | 284 |
| Total | 24.6 | 24.0 | 28.9 | 1,681 |

Note: Rates based on 250 to 499 pregnancies are in parentheses. Rates based on fewer than 250 pregnancies are not shown (*).
[1] Stillbirths are fetal deaths in pregnancies lasting seven or more months.
[2] Early neonatal deaths are deaths among live-born children age 0-6 days.
[3] The perinatal mortality rate is the sum of the number of stillbirths and early neonatal deaths divided by the number of pregnancies of seven or more months duration.

Table 9.6 shows perinatal mortality rates per 1,000 pregnancies by background characteristics. The overall perinatal mortality rate is 29 per 1,000. Stillbirths and deaths under seven days contributed equally to the overall perinatal rate. Although research has not yet established a firm relationship between the two components of the perinatal mortality rate, a number of countries with perinatal mortality rates between 20 and 30 per 1,000 have reported stillbirth and early neonatal mortality rates of approximately the same order of magnitude (Hoffman, et al., 1984).

As was the case with overall infant mortality, the estimates from the survey are approximately twice as high as Ministry of Health statistics on perinatal mortality, which, throughout the period 1993-1997, have hovered around 15 per 1,000 (GOA, UNICEF, and SCF, 1999).

## 9.9 High-Risk Fertility Behavior

Previous research has shown a strong relationship between the fertility patterns of women and the mortality risks of their children. Typically, mortality risks are greater for children who are born to mothers who are too young or too old, who are born after a short birth interval, or who have a high birth order. In this analysis, a mother is classified as *too young* if she is younger than 18 years of age and *too old* if she is older than 34 years of age. A *short birth interval* is defined as a birth occurring within 24 months of the previous birth, and a child is of *high birth order* if the mother had already given birth to three or more children.

Table 9.7 shows the distribution of children born in the five years before the survey by risk category. Although first births to women age 18-34 are considered an unavoidable risk, they are included in the analysis and are shown as a separate risk category.

Column 1 of Table 9.7 shows that in the five-year period before the survey, 29 percent of births were in a single high-risk category and 5 percent were in a multiple high-risk category.

Column 2 shows risk ratios for births in various high-risk categories relative to births not having any high-risk characteristics. Overall, the risk ratio for children in any high-risk category (1.4) was about 40 percent higher than for children who were not in any high-risk category.

Column 3 looks to the future and addresses the question of how many currently married women have the potential for having a high-risk birth. The results were obtained by simulating the risk category into which a birth to a currently married woman would fall if she were to become pregnant at the time of the survey. For example, a woman who was 37 years old at the time of the survey and had three previous births, the last of which occurred three years earlier, would be classified in the multiple high-risk category for being too old (35 or older) and at risk of having a high order birth (greater than three).

Overall, 72 percent of married women have the potential to give birth to a child with an elevated risk of mortality.

Table 9.7 High-risk fertility behavior

Percent distribution of children born in the five years preceding the survey by category of elevated risk of dying and the risk ratio, and the percent distribution of currently married women by category of risk if they were to conceive a child at the time of the survey, Armenia 2000

| Risk category | Births in the 5 years preceding the survey | | Percentage of currently married women [1] |
|---|---|---|---|
| | Percentage of births | Risk ratio | |
| **Not in any high-risk category** | 31.4 | 1.00 | 24.5 [a] |
| **Unavoidable risk category** | | | |
| **First order births to women 18-34 years** | 34.9 | 0.56 | 4.0 |
| **Single high-risk category** | | | |
| Mothers's age <18 | 3.3 | na | 0.2 |
| Mothers's age >34 | 2.6 | 1.00 | 22.2 |
| Birth interval <24 months | 17.5 | 1.35 | 6.6 |
| Birth order >3 | 5.2 | 3.22 | 8.5 |
| Subtotal | 28.5 | 1.50 | 37.5 |
| **Multiple high-risk category** | | | |
| Age <18 & birth interval <24 months [2] | 0.4 | na | 0.1 |
| Age >34 & birth interval <24 months | 0.4 | na | 0.3 |
| Age >34 & birth order >3 | 2.0 | 0.40 | 31.4 |
| Age >34 & birth interval <24 months & birth order >3 | 0.1 | na | 0.3 |
| Birth interval <24 months and birth order >3 | 2.3 | 2.10 | 2.0 |
| Subtotal | 5.2 | 1.09 | 34.0 |
| **In any avoidable high-risk category** | 33.7 | 1.44 | 71.5 |
| Total | 100.0 | - | 100.0 |
| Number of births | 1,657 | - | 4,125 |

Note: Risk ratio is the ratio of the proportion dead of births in a specific high-risk category to the proportion dead of births *not in any high-risk category*.
na = Not applicable
[1] Women are assigned to risk categories according to the status they would have at the birth of a child if they were to conceive at the time of the survey: current age less than 17 years and 3 months or older than 34 years and 2 months, latest birth ocurred less than 15 months ago, or latest birth being of order 3 or higher.
[2] Includes the combined categories age <18 and birth order >3
[a] Includes sterilized women