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Infant Mortality in Tajikistan
Two studies look at risk factors

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The infant mortality rate in a country is so elemental that it is often used as an instant snapshot of the development status of a nation. If a society is unable to meet the fundamental right of a child to survive, it is unlikely to adequately meet the child's right to thrive in the future. This indicator is so important that reducing child mortality is one of the eight UN Millennium Development Goals.

In Tajikistan, mortality rates for infants (under age one) and children under age five (another primary indicator) are very high. Data from different sources vary but it is clear that the incidence of infant deaths is high and, ultimately, largely preventable. UNICEF supported two studies to look into infant mortality rates and the risk factors behind them.

Main findings

1 Infant mortality was confirmed to be very high in the four regions studied. In Sugd province and the Region of Republican Subordination (RRS), IMR averaged 58 deaths per 1,000 live births for the period 1998-2002. In Khatlon province and the capital city of Dushanbe, the rate was 86 deaths per 1,000 live births in 2000 and 103 deaths per 1,000 live births in 2001. These disturbing ratios highlight the urgency of investigating and addressing the factors that lead up to and are present in the deaths.

2 Infant mortality rates are higher in rural areas. This was the case in all four areas studied. Prominent factors in neonatal deaths (death in the first four weeks of life) included rural residency; very limited access to medical services, in part due to travel costs and road conditions; but the births and deaths did take place in hospital. In comparison, the most common factors in post-neonatal deaths (at age one month to one year) were urban residency and a home birth and death.

3 The main causes of neonatal deaths were consistent, i.e., a combination of premature birth and low birth weight. The main cause of post-neonatal deaths in Khatlon and Dushanbe areas was infectious disease, followed by severe anemia and severe malnutrition; in Sugd and RRS regions acute diarrhoea and malnutrition.

4 The most revealing findings relate to the actions taken to help a child who showed signs of illness. For example, the decision to seek care was not the sole decision of parents but involved extended family. Failure to recognize

the severity of the infant's illness, lack of money and transportation to access medical services were also factors.

5 The evidence leads to the conclusion that most infant deaths in Tajikistan are reasonably preventable by addressing inadequate prenatal care services, compromised delivery conditions and the incidence of infectious diseases.

Methodology

There were two studies conducted, each covering two parts of the country. A 2002 study was conducted in Sughd and RRS provinces and a 2003 study was carried out in Khatlon province and the capital Dushanbe. The research enjoyed the combined support of the Ministry of Health, UNICEF and Italy's National Institute of Health (Istituto Superiore di Sanità). The studies used a questionnaire based upon WHO verbal autopsy standards, as well as a set of semi-structured questions. Verbal autopsy is a useful tool when there is conflicting evidence between levels of infant and maternal mortality. The technique consists of interviewing people who have knowledge about events that led up to the death. Experts then examine the information and use it to determine causes of death. Another questionnaire was used to gather information about the socio-economic status of households, number of live births, number of children who died before age one and age of five, and, finally, the practices of mothers during pregnancy.

The Sugd-RRS study surveyed a total of 2,036 households out of 2,040 selected for the study. It showed that 75 households had children who died in the period 2000-2001. The Khatlon-Dushanbe study surveyed a total of 5,113 households out of 5,158 selected for the study. Most respondents spoke Tajik (81.8% in the former study and 79.1% in the latter), followed by Uzbek and Russian.

Rates of infant deaths

In the Khatlon-Dushanbe study, the infant mortality rate was 86 deaths per 1,000 live births in 2000 and 103 deaths per 1,000 live births in 2001. Neonatal deaths were estimated at 31 deaths per 1,000 live births and post-neonatal deaths at 54.5 and 71.7 per 1,000 live births in 2000 and 2001 respectively. The majority (70.8%) of neonatal deaths occurred within the first week of life (early neonatal death). In the Sughd-RRS study, the ratio of infant mortalities was 58 deaths per 1,000 live births over the period 1998-2002: 27% of deaths occurred in the first seven days of life; 15% took place in the late neonatal period between the 8th and 28th days of life; and 58% occurred in the post-neonatal period, between the first month and first year of life. Both studies found higher rates of infant mortality in rural areas than in urban areas.

Causes of infant deaths

Neonatal deaths (Day 1 to Day 28)

The two studies showed that the main cause of neonatal deaths was the same in both study areas—a combination of premature birth and low birth weight (Tables 1a and 1b). This cause

accounted for 32.2% of neonatal deaths in the Khatlon-Dushanbe study and 43.3% in the Sugd-RRS study. It was evident that the main reason for infant deaths was inadequate management of maternal care. In the Sugd-RRS study inadequate maternal care accounted for 76.4% of the deaths.

Table 1a: Causes of neonatal death, Khatlon and Dushanbe

Causes of death	Count	Weighted count	Weighted %
Premature birth, low birth weight	13	787	32.2
Pneumonia	8	517	21.2
Congenital malformation	5	309	12.7
Birth asphyxia	3	209	8.6
Meningitis, encephalitis	3	209	8.6
Local bacterial infection	1	70	2.9
Birth injury	1	70	2.9
Any diarrhoea	1	70	2.9
Not determined	4	200	8.2
Total	39	2,441	100.0

Table 1b: Causes of neonatal death, Sughd and RRS

Causes of death	Count	Weighted count	Weighted %
Premature birth, low birth weight	14	389	43.5
Birth asphyxia	11	294	32.9
Acute diarrhoea	3	106	11.9
Pneumonia	4	54	6.0
Congenital malformation	1	47	5.3
Meningitis, encephalitis	1	4	0.4
Total	34	894	100.0

Post-neonatal deaths (One month to one year)

Unlike neonatal deaths, the causes of post-neonatal deaths differed between the study areas. The main cause in the Khatlon-Dushanbe study was infectious disease, accounting for 70.3% of post-neonatal deaths, followed by severe anemia and severe malnutrition. In the Sugd-RRS study area, the main causes of post-neonatal deaths were acute diarrhoea and malnutrition.

Table 2a: Causes of post-neonatal death, Khatlon and Dushanbe

Causes of death	Count	Weighted count	Weighted %
Meningitis, encephalitis	36	2,151	20.1
Acute diarrhoea	29	1,821	17.0
Severe malnutrition	28	1,712	16.0
Pneumonia	25	1,543	14.4
Severe anaemia	25	1,348	12.6
Bacteraemia, septicaemia	18	1,056	9.9
Measles	18	1,056	9.9
Total	179	10,687	100.0

Table 2b: Causes of post-neonatal death, Sughd and RRS

Causes of death	Count	Weighted count	Weighted %
Acute diarrhoea	12	427	24.7
Severe or moderate malnutrition	14	423	24.5
Meningitis, encephalitis	12	279	16.1
Pneumonia	12	279	16.1
Severe anaemia	9	257	14.9
Injury	2	60	3.5
Bacteraemia, septicaemia	1	4	0.2
Total	62	1,729	100.0

Risk factors in infant deaths

The studies discovered a number of important risk factors associated with infant deaths—place of residency, education and employment status of parents, mother tongue, proximity to health care facilities and gender of the infant. Further, the pattern of factors differed between neonatal and post-neonatal deaths, and between the two study areas.

Khatlon-Dushanbe study

In the Khalton-Dushanbe study, neonatal deaths were most likely to come from households that were: located in rural areas; situated more than 30 minutes from the nearest health care facility; and where Uzbek was spoken. The birth and death typically both took place in hospital. Post-neonatal deaths were most likely to occur in households that were: located in urban centres; close to health care services; and where Tajik was spoken. The birth and death typically both took place at home.

The study also found a gender factor in infant deaths. Overall, males had a higher probability of dying. Specifically, males were more likely to die in the first month of life while females were more likely to die in the post-neonatal period.

In terms of family background, the study found that the mother's age at birth did not play a decisive role. The study did find that infant deaths most often involved mothers who had had

more than one pregnancy. Mothers in these cases had most often completed secondary education while mothers in cases of post-neonatal deaths were most often young and had [completed primary school. Meanwhile, fathers involved in neonatal deaths were most often young, had completed primary education but were employed; and fathers involved in post-neonatal deaths most often had completed secondary or higher education and were unemployed.

Sugd-RRS study

The study identified several characteristics most common to infant deaths. Families were likely to live in a rural area but less than 30 minutes from a health care facility. The birth typically took place at home, with assistance from untrained personnel, and using water drawn from lakes or rivers. One third of the mothers whose infants died had not received prenatal care. Most of the mothers were older than 30 years, had had more than three pregnancies and were unemployed. Most of the fathers were employed but had only primary education or no formal education. As in the Khatlon-Dushanbe study, infant deaths were higher among males.

Seeking outside intervention

The decision to seek outside care usually led to a medical professional. In the Khatlon-Dushanbe study, two out of three respondents visited health care professionals for assistance rather than using traditional medicines. In the Sugd-RRS study, seeking care at a hospital was the most common practice.

The Khatlon-Dushanbe study found that outside assistance was sought by 58 out of the 75 (77%) people who were caring for a child who died. The Sugd-RRS study found that outside care was sought in 32 out of the 60 infant deaths (53%) reported. The main reason for seeking care was the worsening condition of the baby. The most compelling finding had to do with the persons making the decision to seek outside intervention. Typically, the decision was not made by one person acting independently (e.g., a parent) but rather through the collective direction of close relatives, especially the mothers and grandmothers of the parents.

Respondents in the Khatlon-Dushanbe areas said that their child was examined immediately and medications were dispensed, but the treatment period was lengthy and without significant results. Respondents' assessment of the medical professionals who provided care for their child was mostly positive, stating that they were professional and competent. Some respondents were unsatisfied with the health care received, saying the doctor was inexperienced, could not identify the problems with their children or the appropriate treatment. Respondents said that they had to rely on inexperienced local health care workers because they could not afford to travel to more advanced facilities in the city.

Many factors contribute to parents' decision not to seek outside care for their child. Both studies found that these parents were unable to recognize the severity of their child's illness. However, lack of money, transportation and ready access to a hospital were also decisive factors. The financial resources of families were a major factor in both studies. It was found that in rural areas in Sugd and RRS lack of money was a factor which prevented children from receiving essential treatment.

Maternal deaths

The Khatlon-Dushanbe study found nine cases of maternal deaths and the Sugd-RRS study found four cases of maternal death. In the Khatlon-Dushanbe survey most of the deaths occurred in rural areas; three mothers died at home and six in hospital. The mothers who died in hospital were examined by specialized health care staff but may have arrived too late, treatment was complicated or needed medicines were unavailable. Most of the deaths were, however, reasonably preventable— highlighting the need for more effective maternal health services.

In the Sugd-RRS study, all four maternal deaths resulted from post-partum haemorrhage—two women died at home and two en route to a medical facility. One woman died at home because heavy snow prevented her from reaching the hospital; another woman died during transfer from one medical facility to another; and one woman who had traveled by public transit to a medical centre was misdiagnosed, not admitted and died on her way home.

Conclusions

Drawing on the results of the two studies, representatives of the Ministry of Health developed a list of key factors that contribute to Tajikistan's high rate of infant mortality. The group recognized that the current economic situation in the country is a huge factor with many impacts; e.g., an overall deterioration in social and economic conditions; greater numbers of low-income families; an increase in the poverty rate; and reduced capacity in the health care system. There are also issues with the level of professional competence among medical personnel and relatively low awareness of prenatal and maternal health care.

Parents and caregivers were also unable in many cases to assess the severity of an infant's ill-being. Parents are also greatly influenced by close relatives, such as mothers-in-law and grandmothers, in deciding whether or not to seek outside intervention. There is, therefore, a need to conduct awareness campaigns targeting parents and extended families that promote recognition of early warning signs of distress among infants and the capacity to take timely, appropriate interventions.

There is an urgent need to make primary health care facilities more accessible. This means closing the distance between families and health facilities, e.g., reducing or eliminating costs of transportation and/or improving local/immediate health services. Removing these barriers will make it easier for parents to seek more timely care for ailing infants and for mothers to access prenatal and postnatal care for themselves and their babies. The two studies showed the negative impact on infant mortality of inadequate prenatal care and home delivery assisted by untrained personnel. It was also evident that most parents wanted to seek outside care for their child but were constrained by inadequate medical facilities, as well as financial and transportation challenges.

The studies found two basic patterns in causes of neonatal and post-neonatal deaths. In the Sughd-RRS study, factors related to inadequate prenatal care accounted for 43.5% of neonatal deaths although 77% of the mothers of the deceased babies had received some prenatal care. In the Khatlon-Dushanbe study, factors related to inadequate prenatal care accounted for 32% of neonatal deaths.

Recommendations

The study submitted four key findings and related actions to respond to the problems identified.

1. Rates of infant mortality in the areas surveyed were very high. It is recommended to establish an intersectoral working group, with the technical support of WHO and UNICEF, to develop a comprehensive and integrated strategy on prenatal, maternal and infant health.

2. Rates of infant mortality were higher than official statistics for the areas. This is due to discrepancies in the definition of a live birth, low birth rates and death registration. More accurate statistics can be established at the national level with improved birth and death registration and reporting system. Expand the definition of live birth in Sugd and Dushanbe areas. Strengthen the capacity of local health staff to collect and analyse data, and of statistical staff in oblasts and rayons. Increase public awareness related to prenatal and infant health through information, communication and education initiatives.

3. Most post-neonatal deaths, which represent more than half of infant deaths, are the result of infectious diseases. It is recommended that a national review be conducted of the strategies behind the integrated management of childhood illness programme and efforts be made to expand the programme. There is a need to strengthen monitoring mechanisms and enhance the distribution of vaccinations and medical supplies, as well as ensuring the development of national guidelines for the management of diarrhoeal diseases and pneumonia and ensuring the availability of essential drugs and oral rehydration salts in primary health care units. At the local level, oral rehydration salts need to be readily available to households, and education on their proper use. Primary health care centres also need to have a reliable supply of essential drugs.

4. Failures of prenatal care and delivery conditions are implicated in most neonatal deaths, even though most mothers receive some kind of formal care. Needed actions at the national level include further promotion of breastfeeding, through the training of trainers on breastfeeding counseling and review of the national policy and strategy for the promotion of breastfeeding. At the local level there is a need to ensure exclusive breastfeeding and expand the Baby-Friendly Hospitals Initiative to all maternity and children's hospitals.

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