Brief Report
Declining Trends of Infant, Child and Under-five Mortality in Nepal

by Shyam Thapa
Saving Newborn Lives Program, Save the Children/US, Washington DC 20036, USA

Summary

Demographic and Health Surveys conducted quinquennially in 1996, 2001 and 2006 show that infant, child and under-five mortality in Nepal have declined steadily at least over the past 25 years. Estimates based on exponential-decline regression curves fitted to the 15-year data immediately preceding each survey, aggregated by 5-year period, show the infant, child and under-five mortality rates for the period 1986–1990 to be 106, 58 and 158 per 1000 live births and 52, 17 and 67 per 1000 live births for 2001–2005, respectively. The projected rates, assuming that the policy and program efforts are sustained, for the period 2011–2015 are 32, 7 and 38 per 1000 live births. Nepal is most likely to achieve the Millennium Development Goals (MDG) target of a two-thirds reduction in child mortality by 2015, the end of the MDG countdown.

Key words: Infant, child, under-five mortality, Nepal.

Introduction

There have been sustained declines in infant, child and under-five mortality in Nepal over the last several decades. Nepal is one of the few among the 60 countries identified by UNICEF as being ‘on track’ toward achieving the Millennium Development Goals (MDG) regarding child survival [1]. This article reviews levels and trends of the child-mortality components, based on retrospective data for three 15-year periods, preceding each of the quinquennial 1996, 2001 and 2006 Nepal Demographic and Health Surveys (DHS).

Data


Sullivan [5] investigated how the quality of data from the 1996 and 2001 surveys affected the accuracy of fertility estimates derived from these same data. Both studies concluded that data from the two surveys were remarkably good, and that they suffered little from underreporting of births. There was, however, some displacement of births from recent years to earlier years (more so in the 2001 survey than in the 1996 survey), implying that the estimated rate of fertility decline may have been somewhat higher than it actually was. There may also have been some distortion in estimated infant and child mortality trends, although the direction of the distortion was not clear, depending on whether births that died were displaced to a greater or lesser extent than births that survived.

The infant, child and under-five mortality estimates in the survey reports and in Sullivan [5] are period life-table estimates. Luther and Thapa [8,9] used cohort life-tables instead of period life-tables and arrived at slightly different estimates. Both sets of estimates indicated clearly, however, that infant, child and under-five mortality have declined substantially over the past 20 years. Previous work based on the 1976 World Fertility Survey in Nepal suggested that the decline commenced even earlier [10].

Levels and Trends

Table 1 shows estimated levels and trends of infant, child and under-five mortality as given in the 1996, 2001 and 2006 survey reports. These estimates were
derived using the period life-table methodology described in Rutstein and Rojas [11]. The data show that there is generally a good agreement between overlapping estimates from the two surveys for the periods 1986–1990 and 1996–2000. The child mortality estimates, which show the closest overlap between the three surveys, indicate an average annual decline of 3.4 deaths per 1000 live births between 1986–1990 and 1991–1995 and 2.2 deaths per 1000 between 1991–1995 and 1996–2000. There was a decline of 2.4 deaths per 1000 during the 10-year period 1991–2005. The largest discrepancy in the generally consistent pattern occurs between the 1996 and 2001 survey-based estimates of infant mortality for 1991–1995 (79 and 90 per 1000, respectively) and under-five mortality for 1991–1995 (118 and 126 per 1000, respectively). The reasons for the latter discrepancy are not clear although they may have something to do with differential rates of displacement. As mentioned, births that died may be displaced to a greater or lesser extent than births that survived. In addition, as Retherford and Thapa [6,7] have shown, there was more displacement of births in the 2001 survey than in 1996. It is also possible that the discrepancy is simply an artifact of sampling variability, inasmuch as the 95% confidence interval for infant mortality in the 10-year period before the 2001 survey (which is double the width of the 5-year period 1991–1995) is larger than the observed discrepancy for 1991–1995 (the difference of 11 per 1000 between 79 per 1000 and 90 per 1000) [2].

Figure 1 shows the exponential-decline regression curves fitted to the infant, child and under-five mortality data for 5-year periods preceding each of the three surveys. These curves, when extrapolated, allow projection of future rates. Visual inspection indicates that the curves fit the estimates very closely. The fitted curves yield estimated infant, child and under-five mortality rates as shown in Table 2. This simple projection thus suggests that infant, child and under-five mortality will continue to decline rapidly in the near future. Luther and Thapa [8,9] have reached similar conclusions based on an application of an alternative methodology to the 1996 and the 2001 DHS data. The concave-upward aspect of the exponential fits indicates, however, that the rates of decline in infant, child and under-five mortality are all slowing down slightly over time.

These estimates suggest that infant mortality declined by 4.6 deaths per 1000 live births, on an
annual average, between 1986–1990 and 1991–1995, and by 2.8 deaths during the 1996–2000 and 2001–2005 periods. Child mortality declined by an annual average of 3.8 deaths and 1.6 deaths per year, respectively, during the periods 1986–1990 through 1991–1995 and 1996–2000 through 2001–2005. The under-five mortality rate of 67 for the period 2001–2005 translates into approximately 235,000 deaths annually. (Data for estimating the total number of under-five deaths were drawn from the population projections published by the Ministry of Population and Environment) [12]. Based on the 25-year trends, infant, child and under-five mortality for the period 2006–2010 are projected to reach 41, 11 and 51 per 1000 live births, respectively. Furthermore, by the end of 2011–2015 period, the infant, child and under-five mortality rates are expected to reach 32, 7 and 38 per 1000 live births, respectively.

**Discussion and Conclusion**

The data reviewed in this article clearly establish that infant, child and under-five mortality rates in Nepal have declined substantially at least over the past 25 years. Remarkably, the declines have continued in spite of the prolonged state of political instability and armed conflict (‘People’s War’) prevailing in the country for over a decade now [13–15]. It needs to be pointed out, at the same time, that one consequence of the conflict has been displacement of a substantial number of people from their homes, communities and country. The estimated numbers vary widely depending on the information source [16]. Based on the data reported in the 2006 Demographic and Health Survey [3], about one-fifth (16% males and 5% females) of the total population reported being absent from their homes any time over a 1-year period immediately preceding the survey. Of these, nearly two thirds reported being away (40% of whom went out of the country) for more than 6 months, implying an overall rate of just over 13%. (Some of the percentages stated here are derived from, and not directly reported in, the 2006 DHS survey report). Applying this figure to the medium variant population projection [12], we can estimate that about 3.5 million people have been away from home in 2006.

Some portion of this undoubtedly represents a secular phenomenon, but the People’s War has most probably exacerbated the situation. The out-migration—volitional or otherwise—has implication for the timing of family formation (among singles), birth-spacing and child survival. Spacing between pregnancies is known to be a strong correlate and determinant of child survival in Nepal and elsewhere [8, 9, 17]. It can therefore be posited that the relatively prolonged duration of the out-migration has influenced the rate of decline in child mortality in recent years. However, the extent of the influence of this factor on the overall decline warrants further investigation.

In 2003–2004 a study team sponsored by the US Agency for International Development (USAID) undertook a comprehensive review of the policies and programs enacted in the health sector over the last several decades in Nepal [18]. The review, which also included an analysis of data available from multiple sources, including DHS, examined in detail the roles played by various policies, programs (particularly, as regards immunization and micronutrients), institutions, leaderships and donor agencies in contributing to the sustained decline in infant-child mortality over the years. It concluded that these various factors and interventions in the health sector have accounted for much of this progress. Similarly, changes in other social sectors (particularly, education and mass media) most probably have contributed to this. The effects of these interventions and social changes need to be monitored and evaluated periodically. The projections indicate that, if the 25-year trends continue and the policy and program efforts are sustained, Nepal will most likely meet the MDG target of a two-thirds reduction in child mortality by 2015, the final year of the MDG countdown.

**References**