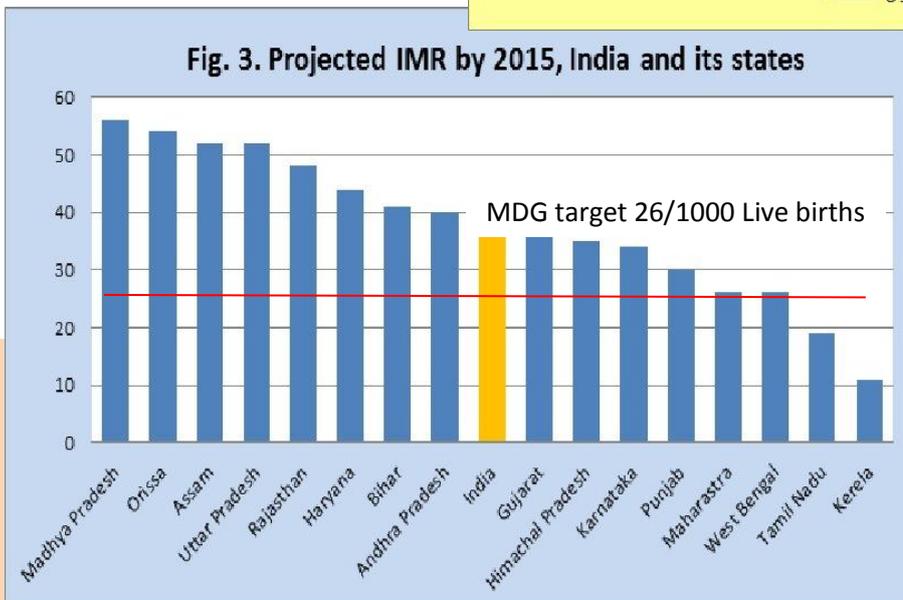
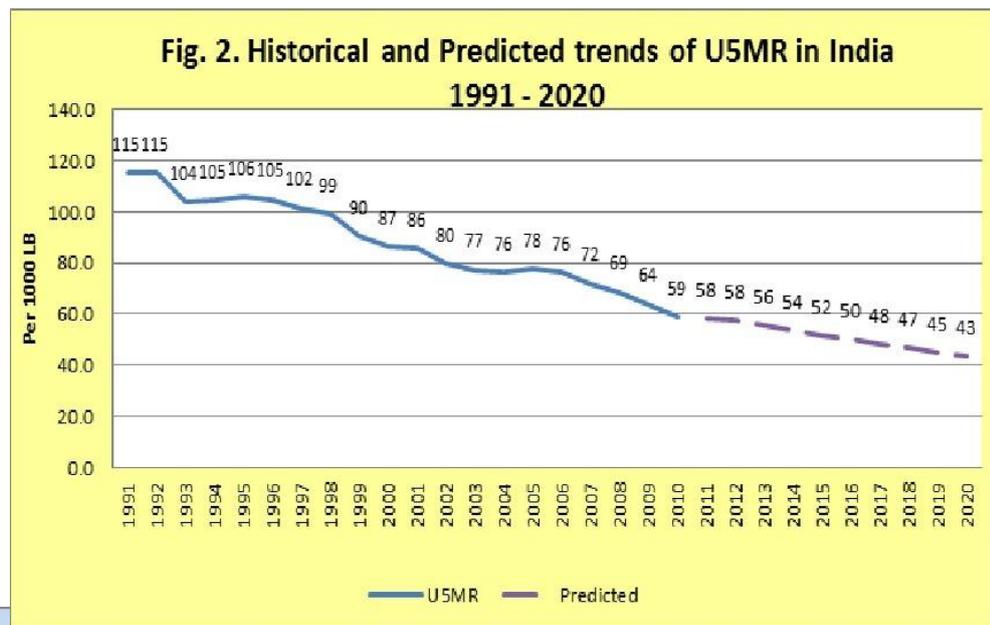
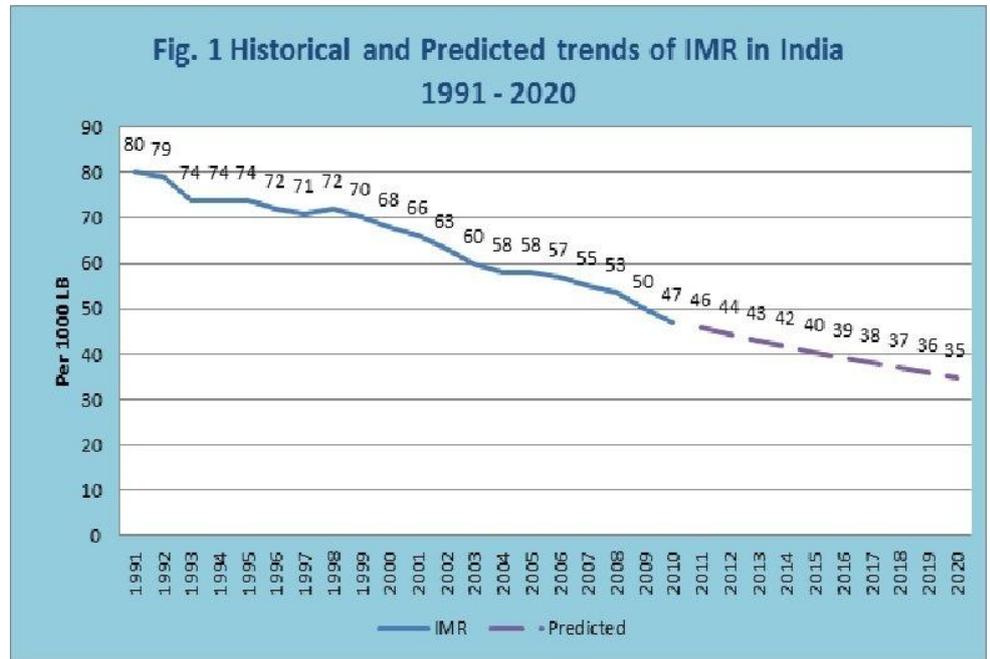


Historical and predicted trends

- There has been a consistent decline in Infant Mortality Rate (IMR) and Under-Five Mortality Rate (U5MR) in India. The rate of decline in current decade is higher than in the previous.
- However, based on robust projections, at the current rate of decline, India is unlikely to meet the targets for Millennium Development Goal (MDG)-4, which aims to reduce by two thirds, between 1990 and 2015, the under-five mortality rate.
- Six states of India though are likely to achieve the IMR and U5 MR target of MDG-4: Tamil Nadu and Kerala in the South, Maharashtra in the West, West Bengal in the East, and Punjab and Himachal Pradesh in the North.



- There is a small or no decline in early neonatal mortality rate (ENMR), which hovers at around 30/1000 live births. ENMR is an indicator of quality of perinatal care.
- In the last decade, IMR decline in urban areas is much less sharper than in rural areas, narrowing the gap between the rural and urban.

What determines Child Survival in India

1. Maternal and demographic factors

1.1. Education: Children born to mothers with at least 8 years of schooling have more chances to survive

- 1.1.1. IMR and U5 MR among children born to illiterate mothers have been consistently higher than those born to mothers with any education. However, the association between maternal education and child mortality becomes significant only when maternal education exceeds 8 years of schooling. For example, children born to mothers with at least 8 years of schooling have 32% lesser chances of dying in neonatal period and 52% lesser chances in the post-

Fig. 4. Projected U5MR by 2015, India and its states

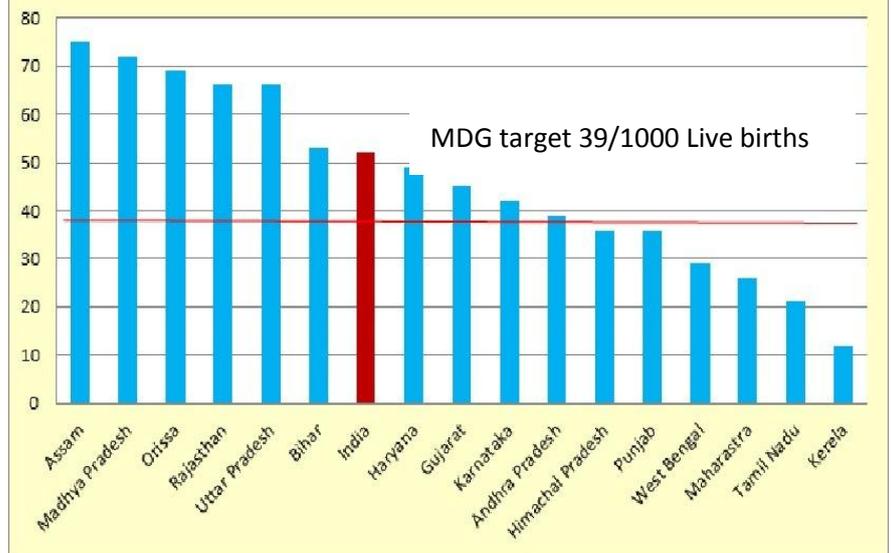


Fig. 5. Trend of Early neonatal, Neonatal and post neonatal mortality, India 1976 - 2010

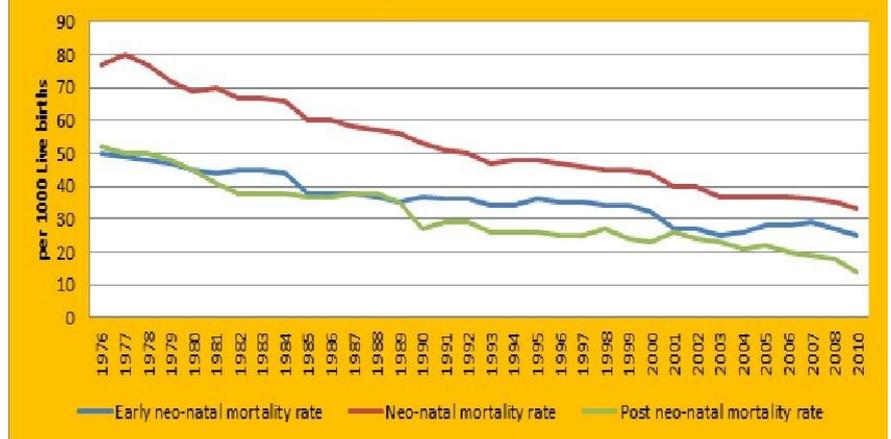
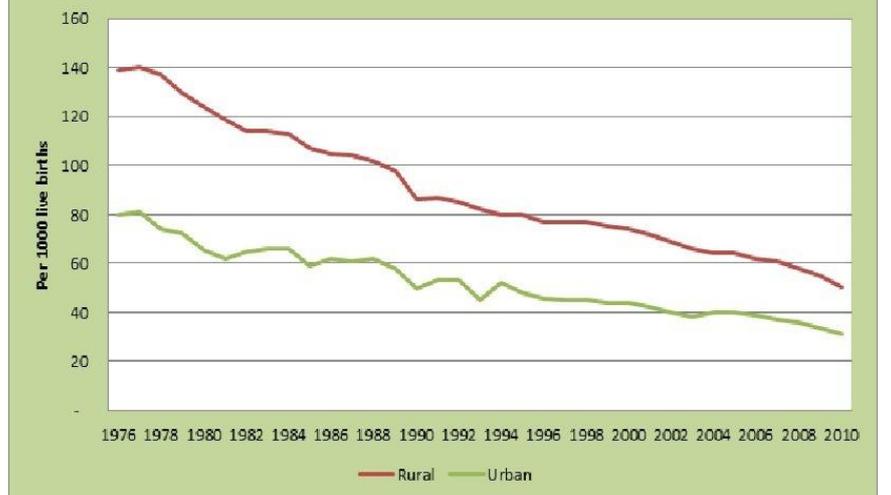


Fig 6. Trend of IMR by place of residence, India 1976 - 2010



neonatal period, as compared to the illiterate mothers.

1.2. Age: Children born to adolescent mothers are at higher risk

1.2.1. Infant and U5 mortality rates are highest among mothers under 20 years of age. The rates are lowest among the children born to mothers between the ages of 20-24, remain low up to 25-34 years of age, and increase again after that age.

1.2.2. The effect of the low age of the mother on mortality is highest during the neonatal period (79% higher), and progressively diminishes during the post-neonatal (27% higher) and 2-4 year age-group.

1.3. Spacing between childbirths: Children born less than two years after the first delivery are less likely to survive

1.3.1. There is a consistent and significant impact of birth intervals less than 24 months on child survival. For example, a child born within 24 months of the previous child has 68% higher risk of dying within the neonatal period and 99% higher risk of dying in the post-neonatal period. The risk further increases sharply if the previous child has died. A short birth interval not only increases mortality risk of the subsequently born children, but also of those born earlier.

1.4. Maternal Nutrition Status: Mortality among children born to malnourished, anemic as well as obese mothers is higher

1.4.1. Analysis of the National Family Health Survey (NFHS)-3 data showed that neonatal mortality among children born to mothers with low Body Mass Index (BMI) (<18.5) was slightly higher than those with normal BMI (18.5-24.9). Similarly, children born to obese mothers (high BMI, >18.5) showed 2.7 times higher mortality during neonatal period than those of mothers with normal BMI. This effect was much less marked beyond the neonatal period.

1.4.2. While mild maternal anemia (hemoglobin levels 10-11.9 gm/dL) did not confer additional risk of death in infancy, moderate or severe anemia (Hb levels <10 gm/dL) was associated with 26% higher neonatal and 16% higher post-neonatal mortality rates.

1.5. Attendance at childbirth: Deliveries attended by health professionals have a lower risk

1.5.1. NFHS-3 revealed that neonatal mortality is lowest for children delivered at home by health professionals (19.8/1000 live births) and was highest for children delivered at home by traditional birth attendants (27.2/1000 live births). Mortality among those delivered in a hospital was in between the two (25.2/1000 live births).

2. Social and Economic Factors

2.1. Social Group: Children born in SC and ST families have higher risk of dying than others

2.1.1. The risk is even higher for children born in scheduled tribe (ST) families as compared to scheduled caste (SC). For example, a child born to an SC family has 13% higher risk of dying in the neonatal period and 18% higher risk of dying in the post-neonatal period, as compared to others. Similarly, a child born to an ST family has 19% higher risk of dying in the neonatal period and 45% risk of dying in the post-neonatal period.

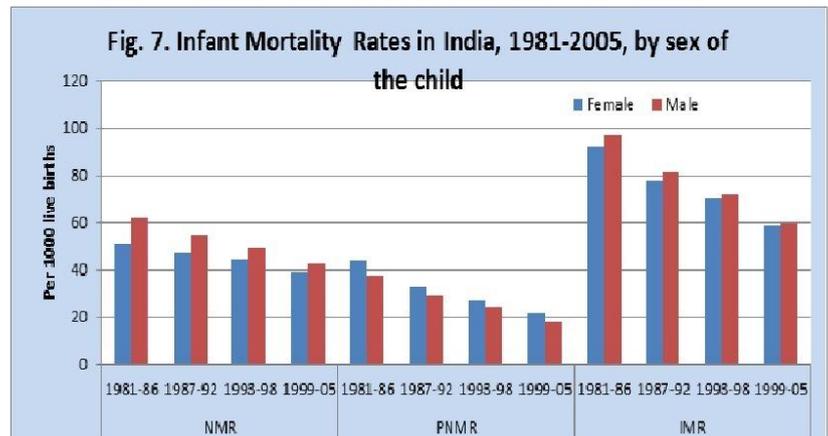
2.2. Economic status (as measured by Standard of Living Index or SLI): Mortality among low SLI has declined the most

2.2.1. Between 1981 and 2005, U5 mortality levels and its components have declined across all economic groups, as defined by the Standard of Living Index (SLI). The decline among Low SLI households has been the highest (37.7%), while High SLI households have shown the least decline. This is a very positive trend which indicates that the gap between rich and poor is narrowing throughout the years.

2.2.2. Neonatal mortality among children born to households with high SLI has not declined at all.

2.3. Sex of the child: IMR among girls has become equal to that among boys, indicating that gender inequality is worsening

2.3.1. Girls have lower mortality in the neonatal period, but then have higher mortality than boys thereafter throughout the childhood. Due to lower Neonatal Mortality Rate (NNMR), IMR in girls had been lower than among boys during all five year periods since 1981. However, in recent years, due to slower decline in NNMR among girls, IMR among girls has become equal to that among boys.



3. Environmental Factors

3.1. IMR and U5 mortality rates are consistently lower among children living in families who accessed drinking water from a safe source as compared to those who accessed drinking water from an unsafe source. Similarly, the IMR and U5 mortality rates are consistently lower among children living in families with access to an improved toilet as compared to those who do not have such an access.

Conclusions

To accelerate progress towards achieving MDG-4 by 2015 there are four areas of concern to address:

1. Large inequities in U5 mortality across states and between social and economic groups inhibit the acceleration in progress. The good news is that there is some evidence of reduction of social and economic inequalities over the past two-three decades.
2. Continued presence of several risk factors, which are significantly associated with infant and U5 mortality retard the progress: foremost among them are low levels of maternal education (less than class 8), early childbearing (earlier than 20 yrs), and inadequate birth spacing (less than 24 months).
3. Stagnation of early neonatal mortality in India and most of the states highlight the importance of improving quality of perinatal care for improving child survival.
4. The analysis also points to some disturbing trends: slower decline of under-five mortality in urban areas, strong and apparently independent association of neonatal mortality with maternal obesity and progressive diminishing of biological advantage that girls have in infancy. When seen in context of increasing urbanization, these trends are likely to become increasingly important in determining child survival in times to come.