

# Mortality Rates and Socio-Economic Conditions in India: Awareness and Health Review

## Abstract

Demographic and socioeconomic characteristics have a substantial negative effect on infant mortality. Primitive tribes have poor socioeconomic status, and their unique ways of understanding illness and health care. The present paper is to discuss Infant mortality an indicator of the health status not only of infants, but also of the whole population and of their poverty ridden social and economic status in the country. They face excessive vulnerability, as underprivileged, to a hostile environment and suffer malnutrition and serious health problems; All this leads to high rates of infant mortality and morbidity. It is also important to discuss in this paper and about the awareness and health importance in this paper that the key findings, besides pointing at the medico-clinical causes, indicate that the Socio-economic factors like household income, female education, access to health services and immunization programmes are important determinants to assess status of infant mortality.

**Keywords:** Health, Infant Mortality, Socio-economic Status, Awareness  
Introduction

Most people mistakenly associate Fertility Awareness with the Calendar Rhythm Method of birth control, which uses a formula to calculate a woman's probable window of fertility based on the lengths of her previous cycles and the fact that ovulation generally occurs 14 days before menstruation (Nofziger, 1992, p. 24). Couples who wish to prevent pregnancy are encouraged to avoid intercourse during the fertile period. However, the Rhythm Method is not an accurate or reliable indicator of fertility because stress, illness, travel, or drugs can unexpectedly alter the timing of ovulation in a woman's cycle (Nofziger, 1992, p. 25). It also tends to erroneously overestimate the length of the fertile period. Most importantly, because it depends on historical data to make predictive calculations of a fertile time, the Calendar Rhythm Method does not allow for a real-time objective reflection of the status of a woman's unfolding menstrual cycle events.

Despite their effectiveness, Fertility Awareness-based methods are rarely offered as a birth control option in clinic or community settings (Arevalo, 1997). Studies on contraceptive use show that only 2% of Canadian women (Fisher, Boroditsky, & Bridges, 1999) and 2.7% of women in the United States (Frank, 1999) use a Fertility Awareness-based method for birth control.2 However, this may not represent the potential demand for these methods. Stanford, Lemaire, and Fox (1994) found that, when accurate information was provided, 43% of women patients in a family practice were interested in learning more about Natural Family Planning, with 24% interested in using it to avoid pregnancy and 32% interested in using it to become pregnant (as cited in Stanford, Lemaire, & Thurman, 1998). A second study of randomly selected women in Missouri found that 22.5% of respondents were interested in using Natural Family Planning to avoid pregnancy and 37.4% were interested in using it for conception (Stanford, Lemaire, & Thurman, 1998). Furthermore, a study on conception found that "if mucus quality alone was used to time intercourse, it would cut the time it takes many women to get pregnant by half" ("Mucus is key," 2004). Yet a survey of 80 Australian women who visited a fertility clinic after trying to conceive for more than two years found that only 26% had enough knowledge of Fertility Awareness to use it to conceive (Blake, Smith, Bargiacchi, France, & Gudex, 1997).

Fertility Awareness also has the potential to reduce a woman's exposure to expensive, invasive, and time-consuming infertility treatments.

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In the absence of comprehensive, accurate Fertility Awareness education, women are denied the ability to make truly informed choices about their reproductive health. Equally significant is the fact that the mass cultural ignorance about the inner workings of women's bodies "can lead to lowered self-esteem and confusion about sexuality" (Weschler, 2002, p. xx).

#### **Objectives of the Study**

1. To know the importance of mortality for socio-economic development
2. To eradicate the malnutrition of MMR this is important in Health problems.
3. To achieve the millennium development goals of United Nations
4. To assess the causes for poverty in malnutrition, infant mortality and maternal mortality

#### **Historical, Predicted Trends and Social-Economic 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.

Children born in SC and ST families have higher risk of dying than others. The risk is 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. Belonging to a social group, however, is not an independent risk factor for mortality. Its effect on mortality appears to be mediated through other social, economic and environmental factors. Economic status (as measured by Standard of Living Index or SLI): Mortality among low SLI has declined the most. Between 1981 and 2005, under-five mortality levels and its components have declined across all economic groups, as defined by the Standard of Living Index. 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.

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

Economic status has an independent effect on U-5 mortality and its components. Sex of the child: IMR among girls has become equal to that among boys, indicating that gender inequality has increased. 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.

One issue that continues to attract the attention of public health researchers is the possible relationship in high-income countries between income, income inequality and infant mortality (IM). According to the income inequality hypothesis, referred to as the "big idea", once a society progresses beyond the point of absolute deprivation, then it is the distribution of income within the society that affects health outcomes. A significant association in wealthy nations between IM and income distribution, but not with absolute income were found in two recent ecological cross-sectional studies of OECD (Organisation for Economic Co-operation and Development) countries and in a systematic review. Conversely, Schell conducted a study of 152 high, middle and low income countries, and did not find a significant association between income inequality and IMR in high income countries. Recently, Olson found that both income and income inequality affect IM in the USA. Moreover, Regidor showed that in 21 high-income countries, the relationship between IM and income inequality, demonstrated in 1995, disappeared in 2005.

#### **Review of Literature**

Regidor E, et. al. (2012), and Olson et. al. (2010), study showed that all four socio-economic determinants were significantly associated with IMR. In detail, we found that both income and income inequality were associated with IM. These results are consistent with those reported by Olson in the USA, but only partially consistent with evidence from cross-sectional studies (in countries including Italy) (Wilkinson RG, Pickett K; 2009) which concluded that in developed societies IM is associated with income inequality but not with absolute income. In line with several studies our results also indicated a significant inverse association between IM and female education.

Laura Dallolio et al. (2012) study was not designed to examine or explain inequalities between the different areas of Italy. However, we speculate that regional differences in socio-economic factors, where Southern regions are more deprived and have a very high unemployment rate, can reflect disparities in IMR. Public health services in Italy are already experiencing the impact of the ongoing economic crisis. Ensor et al. (2010) assessed that recessions do have a negative association with maternal and infant health outcomes. According to this perspective, socio-economic factors could impact not only on IMRs, but also explain regional disparities.

Socio-economic factors such as income, unemployment rates, average education level, nutritional status, comorbidities, population density and mixing rates, access to health care and quality of health system resources, as well as environmental factors may account for the observed variations in mortality rates. Georgios (2011) public spending on health is a core factor in determining health outcomes, especially for the poor, and, although not universally accepted as a powerful determinant of overall mortality, it might also influence, to some degree, the probability of death. Therefore, the per capita government expenditure on health, expressed in international dollars and calculated using purchasing power parities (PPPs), was extracted from the World Health Information Statistical Information System (WHOSIS). PPPs can be used as currency conversion rates to express expenditures provided in national currencies into an artificial currency, thus eliminating the effect of price level variability across countries. Commonly, the PPP exchange rate refers to the number of units of a country's currency needed to purchase the same quantity of goods and services in local market, as a United States (US) dollar would buy in the US at a given point in time. The international dollar is, therefore, a hypothetical unit of currency used to translate and compare costs from one country to the other having as reference point the US dollar. To further assess the potential effect of the health care services infrastructure in each country, we also used the reported number of beds per 100,000 inhabitants and the share of the population who declared an unmet need for medical treatment or examination.

Singariya M.R. (2013) in his paper 'Socioeconomic Determinants of Infant Mortality Rate in India' explored several socioeconomic factors associated with infant mortality rate in major states of India. Using quantitative secondary data collected from various databases and regression & principal components analysis as statistical methods study show that women empowering indicators like percent female engaged in salaried work and female literacy rate have negative relationship but female work participation rate and percent female cultivators have positive association with infant mortality rate in India. Demographic variables like mean age of marriage, mean age of cohabitation, age at first birth have statistical significant and negative association, while percent marriage below age eighteen and decadal population growth rate have statistical significant and positive association with infant mortality rate. Increase in urbanization, per capita income, monthly per capita consumption expenditure and household facilities like electrification, sanitation and telephone accessibility have statistical significant and declining impact on IMRs in India. It suggest that decline in IMR is associated with reduction in population growth rate, strict enforcement of marry act that allow marriage of female only after eighteen years age in India and transformation of women employee from cultivation work to industrial or other salary oriented work would be helpful in reducing the level of IMRs in India.

Bora JK, Saikia N (2018) highlights in the paper 'Neonatal and under-five mortality rate in Indian districts with reference to Sustainable Development Goal 3: An analysis of the National Family Health Survey of India (NFHS), 2015–2016' that India has a highly significant role to play in global efforts to end the preventable death of new born and children under the age of five, given that it has the highest number of deaths among these two groups in the world. Further the author expressed that India contributes the highest global share of deaths among the under-fives. Continuous monitoring of the reduction in the under-five mortality rate (U5MR) at local level is thus essential to set priorities for policy-makers and health professionals. In this study, we aimed to provide an update on district-level disparities in the neonatal mortality rate (NMR) and the U5MR with special reference to Sustainable Development Goal 3 (SDG3) on preventable deaths among new-borns and children under five. Both the NMR and U5MR vary enormously across Indian districts. With respect to the SDG3 target for 2030 for the NMR and the U5MR, the estimated NMR for India for the period studied is about 2.4 times higher, while the estimated U5MR is about double. At district level, while 9% of the districts have already reached the NMR targeted in SDG3, nearly half (315 districts) are not likely to achieve the 2030 target even if they realize the NMR reductions achieved by their own states between the last two rounds of National Family Health Survey of India. Similarly, less than one-third of the districts (177) of India are unlikely to achieve the SDG3 target on the U5MR by 2030. While the majority of high-risk districts for the NMR and U5MR are located in the poorer states of north-central and eastern India, a few high-risk districts for NMR also fall in the rich and advanced states. About 97% of districts from Chhattisgarh and Uttar Pradesh, for example, are unlikely to meet the SDG3 target for preventable deaths among new-borns and children under age five, irrespective of gender.

PTI (2018) published report that India has achieved a remarkable feat in arresting maternal and infant mortality rates and would surpass SDG goals of reducing maternal mortality to 70 per lakh live births by 2025 instead of the target of 2030. The maternal mortality rate (MMR) per lakh live births has reduced to 130 in the country while there has been a significant improvement in checking infant mortality rate (IMR) deaths. In India MMR, IMR and under-five mortality has declined faster than the world pace. If we talk about MDGs, according to the 2014-15 records, the decline has been 77 per cent as against global 43 per cent." MMR have been declined by 37 points that is per lakh live births. 167 was the mortality which is now 130. India has attained the position where we have gone far away than the MDG (millennium development goals). By 2025 India will be able to surpass the SDG (sustainable development goals) also." In India States Kerala, Tamil Nadu and Maharashtra have shown significant performance in sharp decline of maternal and infant mortality trends.

World Health Organization (2015) 'Trends in maternal mortality: 1990 to 2015' Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division reveals that the examining countries that experienced little to no reduction in maternal mortality since 1990 reveals several prevalent factors that impede progress. Among the 27 countries categorized as likely having made "no progress", 23 are particularly impacted by the HIV epidemic. Despite the recent positive influence of antiretroviral medications on AIDS-related indirect maternal mortality, overall the epidemic poses immense challenges to maternal mortality reduction due to the strain it places on health systems and infrastructure, in addition to its direct health impacts. Emergent humanitarian settings and situations of conflict, post-conflict and disaster also significantly hinder progress. Indeed, 76% of high maternal mortality countries (those with MMR  $\geq$  300) are defined as fragile states (33). In such situations, the breakdown of health systems can cause a dramatic rise in deaths due to complications that would be easily treatable under stable conditions. At the peak of the 2014–2015 Ebola virus disease outbreak in Liberia, for example, maternal health service utilization dropped precipitously and common obstetric complications went untreated out of fear of disease transmission (34). Compounding the tragedy of lives lost in crisis settings, many of these deaths go unrecorded. Settings where the needs are greatest are also those with the least evidence and analysis. In countries designated as fragile states, the estimated lifetime risk of maternal mortality is 1 in 54. Many of the most vulnerable populations are not represented in the current global data. Moreover, even within countries with good overall progress indicators, the optimistic numbers often mask extreme disparities. Australia, for example, determined through a specialized study that the MMR among Aboriginal and Torres Strait Islander women was over twice that of non-indigenous women. Marginalized subpopulations often lack representation in the data, and disparities may not be evident without disaggregating data. This lack of accurate information makes it nearly impossible to determine how to best address the maternal health needs among the most vulnerable.

#### **Health and Mortality Facts**

Economic determinants of mortality differences: absolute or relative income? Perhaps the most common indicator of living standards of a country is per capita gross domestic product (GDP), which is used as a measurement of the average income of a person in a population (at a sub-national one refers to gross regional product (GRP). It would be reasonable to assume that there is a positive relation between income level and health, as high income increases the consumption of commodities that have a direct impact on the quality of life, such as housing, dietary and health care factors. Consequently, a changing state of the economy will also affect the health of a population. However, the association between living standards and mortality is not simply negative and linear. It is suggested that among rich countries the relation between income and

mortality may be characterised by diminishing returns to scale (Wilkinson, 1992), or that confounding factors exist which negate the association between income and health. For instance, lifestyle factors, industrialisation and urbanisation partly confounded the income-mortality association in Western Europe (Mackenbach and Looman, 1994). Another example where economic development did not explain all differences in mortality was when several countries with different political systems but similar national incomes were compared. From the 1960s to the 1980s, Spain and Portugal (the two least developed countries in Western Europe) made great strides in life expectancy, while countries in Eastern Europe showed little progress (Guo, 1993). One reason for this development was that in the former Eastern bloc, the communist party controlled all political and economic activity including the health system. In order to compete with the West these countries concentrated most of their energies into heavy industry and often ignored the non-economic sectors. Neither did the state-controlled media cover the popular health movement in the West that prevented the middle aged in Eastern Europe from adapting beneficial behavioural changes, as the effectiveness in the prevention and treatment of cardiovascular diseases was largely responsible for the increased years of life expectancy and the difference in mortality between adults in Western Europe and those in Eastern Europe (ibid.).

However, the role of economic factors in causing the East-West mortality divide should not be dismissed. While the West progressed in terms of economic development, much of Eastern Europe lagged behind, even though in the early 1960s, levels of GDP did not differ much between the two parts of Europe. After communism collapsed, the economic transition occurred very rapidly, which led to large declines in economic productivity and sudden changes in the employment structure (SpijkerJeroen et al.; 2010). This was mainly due to job losses in the industrial sector, as many industries were forced to lay off a large number of workers in order to fulfil the necessary changes to compete in a market economy. In Russia, this resulted in a large labour turnover (sum of job gains and losses as a percentage of average employment), but with more job losses than gains the economic transformation prompted the emergence of unemployment, something that the population had not experienced before. This caused enormous stress for the Russians, not only because jobs were no longer guaranteed, but many aspects of the social welfare system also collapsed (Leon and Shkolnikov, 1998). The repercussions on the health of the population were devastating: between 1990 and 1994 life expectancy for men decreased 6 years to 57.7 years and for women decreased 3 years to 71.2 years – an unprecedented pace of deterioration in a country not at war. We can observe the Maternal Mortality Ratios in different countries of the world which is internationally comparison was made from the *Table No. 1*.

**Table No. 1: International comparison of Maternal Mortality Ratio (MMR)**

Sl. No.	Country	MMR per 1,00,000 live births
1	Sierra Leone	1100
2	Chad	980
3	Central African Republic	880
4	Somalia	850
5	Burundi	740
6	Democratic Republic of the Congo	730
7	South Sudan	730
8	Côte d'Ivoire	720
9	Guinea	650
10	Liberia	640
11	Niger	630
12	Cameroon	590
13	Guinea-Bissau	560
14	Nigeria	560
15	Mali	550
16	Malawi	510
17	Lesotho	490
18	Mozambique	480
19	Zimbabwe	470
20	Angola	460
21	Togo	450
22	Madagascar	440
23	Gambia	430
24	Ethiopia	420
25	Congo	410
26	United Republic of Tanzania	410
27	Afghanistan	400
28	Burkina Faso	400
29	Kenya	400
30	Eritrea	380
31	Ghana	380
32	Haiti	380
33	Sudan	360
34	Uganda	360
35	Comoros	350
36	Benin	340
37	Mauritania	320
38	Rwanda	320
39	Senegal	320
40	Swaziland	310
41	Equatorial Guinea	290
42	Zambia	280
43	Timor-Leste	270

44	Yemen	270
45	Guyana	250
46	Gabon	240
47	Djibouti	230
48	Lao People's Democratic Republic	220
49	Papua New Guinea	220
50	Sao Tome and Principe	210
51	Bolivia (Plurinational)	200
52	Myanmar	200
53	India	190
54	Indonesia	190
55	Nepal	190
56	Bangladesh	170
57	Botswana	170
58	Cambodia	170
59	Pakistan	170
60	Guatemala	140
61	South Africa	140
62	Kiribati	130
63	Namibia	130
64	Solomon Islands	130
65	Suriname	130
66	Bhutan	120
67	Honduras	120
68	Morocco	120
69	Philippines	120
70	Tonga	120
71	Paraguay	110
72	Venezuela (Bolivarian Republic of)	110
73	Dominican Republic	100
74	Nicaragua	100
75	Micronesia (Federated States of)	96
76	Algeria	89
77	Peru	89
78	Democratic People's Republic of Korea	87
79	Ecuador	87
80	Vanuatu	86

81	Panama	85
82	Trinidad and Tobago	84
83	Colombia	83
84	Cuba	80
85	Jamaica	80
86	Kyrgyzstan	75
87	Mauritius	73
88	Argentina	69
89	Brazil	69
90	El Salvador	69
91	Mongolia	68
92	Iraq	67
93	Turkmenistan	61
94	Fiji	59
95	Samoa	58
96	Cabo Verde	53
97	Barbados	52
98	Jordan	50
99	Mexico	49
100	Syrian Arab Republic	49
101	Viet Nam	49
102	Occupied Palestinian Territory	47
103	Tunisia	46
104	Belize	45
105	Egypt	45
106	Saint Vincent and the Grenadines	45
107	Tajikistan	44
108	Georgia	41
109	Costa Rica	38
110	Bahamas	37
111	Uzbekistan	36
112	Saint Lucia	34
113	Romania	33
114	China	32
115	Maldives	31
116	Armenia	29
117	Malaysia	29
118	Sri Lanka	29
119	United States of America	28

120	Brunei Darussalam	27
121	Republic of Korea	27
122	Azerbaijan	26
123	Kazakhstan	26
124	Thailand	26
125	Russian Federation	24
126	Grenada	23
127	Iran (Islamic Republic of)	23
128	Ukraine	23
129	Bahrain	22
130	Chile	22
131	Albania	21
132	Republic of Moldova	21
133	Puerto Rico	20
134	Turkey	20
135	Lebanon	16
136	Saudi Arabia	16
137	Serbia	16
138	Libya	15
139	Hungary	14
140	Kuwait	14
141	Uruguay	14
142	Croatia	13
143	Latvia	13
144	Canada	11
145	Estonia	11
146	Lithuania	11
147	Luxembourg	11
148	Oman	11
149	Cyprus	10
150	France	9
151	Ireland	9
152	Malta	9
153	Bosnia and Herzegovina	8
154	New Zealand	8
155	Portugal	8
156	United Arab Emirates	8
157	United Kingdom	8
158	Germany	7

159	Montenegro	7
160	Slovakia	7
161	Slovenia	7
162	The former Yugoslav Republic of Macedonia	7
163	Australia	6
164	Belgium	6
165	Japan	6
166	Netherlands	6
167	Qatar	6
168	Singapore	6
169	Switzerland	6
170	Bulgaria	5
171	Czech Republic	5
172	Denmark	5
173	Greece	5
174	Austria	4
175	Finland	4
176	Iceland	4
177	Italy	4
178	Norway	4
179	Spain	4
180	Sweden	4
181	Poland	3
182	Israel	2
183	Belarus	1

Source: UN Inter-Agency "Trends in Maternal Mortality: 1990 to 2013".

Lok Sabha Unstarred Question No. 114: 2015.

### **Strategies driving Success in Reducing Maternal Mortality**

WHO's recently published Strategies towards ending preventable maternal mortality (EPMM) establishes a strategic framework that specifies five objectives. Below, for each of these objectives, examples are presented of strategies implemented by countries that have made significant reductions in maternal mortality.

1. Addressing inequities in access to and quality of sexual, reproductive, maternal and newborn health care
  - i. Ethiopia trained women's association members in strategies for addressing social and structural barriers to sexual, reproductive, maternal and newborn health, and also trained health managers on gender mainstreaming in their areas of work.
  - ii. Viet Nam developed sexual and reproductive health services specifically for adolescents and youths.

2. Ensuring universal health coverage for comprehensive sexual, reproductive, maternal and newborn health care
  - i. Rwanda used a community-based health insurance scheme to ensure vulnerable populations' access to maternal and child health services (26).
  - ii. Bangladesh expanded access to maternity services in new, private-sector health-care facilities.
3. Addressing all causes of maternal mortality, reproductive and maternal morbidities, and related disabilities
  - i. Nepal expanded access to modern family planning methods, and increased school attendance and literacy rates among women and girls.
  - ii. The Maldives strengthened emergency obstetric care, including basic care and comprehensive emergency obstetric care throughout the country's health system.
4. Strengthening health systems to respond to the needs and priorities of women and girls
  - i. Indonesia invested in the training of midwives and the creation of dedicated, village-level delivery points for maternal health services.
  - ii. Cambodia invested in transport infrastructure and construction of health-care facilities staffed with an expanded cadre of trained midwives throughout the country, including maternity waiting houses and extended delivery rooms.
5. Ensuring accountability to improve quality of care and equity
  - i. Mongolia introduced procedures at the facility, provincial and ministerial levels to ensure maternal deaths were reported within a 24-hour period and transmitted to the Ministry of Health for review.
  - ii. India developed guidelines for maternal death audits and near-miss analyses.

### **Mortality and Burden of Disease**

Mortality and burden disease deals with indicators of life expectancy and mortality rates, which provide good summary measures of overall population health. The indicators include overall life expectancy at birth, as well as infant and under-five mortality (the probability of dying between birth and 1 and 5 years of age, respectively), and adult mortality (the probability of dying between 15 and 60 years of age). Levels and trends for child mortality are particularly relevant in understanding public health because globally almost 20% of all deaths are of children less than 5 years old.

Neonatal mortality (death during the first 28 days of life per 1000 live births) accounts for a large proportion of child deaths in many countries, especially in low-income settings. Although estimates of life expectancy reflect how many years a person might be expected to live given the current mortality rates in specific settings, they say nothing about health status during life. Mortality statistics alone are insufficient in fully describing and comparing the health status of different populations because they

underestimate the burden of ill-health caused by chronic conditions and provide no information on non-fatal health outcomes. "Healthy life expectancy" (HALE) at birth, on the other hand, represents the average number of years that a person could expect to live in "good health" by taking into account years lived in less than full health due to disease and/or injury. As a result, it captures both fatal and non-fatal health outcomes and disabilities, of which the most common worldwide are hearing loss, visual impairment and mental disorders. The estimates of mortality presented here have been derived wherever possible from death-registration data reported annually to WHO.

For countries where such data are not available or are of poor quality, household surveys and censuses are used to create life tables from a model developed by WHO that generates estimates of mortality rates and life expectancy. In the case of child mortality, WHO is part of the Inter-agency Group for Child Mortality Estimation (IGME) which was established to advance the work on monitoring the progress made towards the achievement of the MDG target, 18 and works to harmonize the estimates used by its members. In addition, to develop its country estimates of HALE, WHO has conducted analyses of 135 causes of disability for 17 regions of the world and analysed 69 health surveys in 60 countries.

WHO makes every effort to standardize the methods used to estimate and project indicators for all Member States using comparable data. This may lead to some differences compared with the official statistics prepared by individual Member States. It is also important to stress that these estimates are subject to considerable uncertainty, especially for countries with weak statistical and health information systems where the quality of underlying empirical data is limited. Estimates of HALE are more uncertain than estimates of life expectancy, as it is particularly difficult to ensure comparable measurements of disability across countries, and to correct for limitations in the data. In recognition of this, uncertainty intervals for WHO estimates of mortality and life expectancy will be made available in the Global Health Observatory.

### Conclusions

To accelerate progress towards achieving MDG-4 by 2015 there are four areas of concern to address the 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. 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). 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. 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. There is a need for an elaboration of the social profile of the villages is necessary to explain how socio-economic factors are the main causes and determinants behind IMR and budget should be provided for independent research in Health and Fertility research areas along with awareness programmes sponsored by government and non-governmental agencies.

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