

SUMMARY- REPORT on CAUSES of DEATH: 2001-03 in INDIA

Background:

Long-term mortality measurement by cause, gender and geographic area has been the requirement of every country. With this in view, Medical Certification of Causes of Death (MCCD) was introduced in the country by providing statutory backing under Section 10 of the Registration of Births and Deaths Act, 1969. Despite its operationalization in almost all the States/UTs, the scheme has been working at different levels of efficiency across the states in terms of coverage, reporting and quality of data. At present, deaths occurring in urban medical institutions are only being covered under the scheme. Owing to these limitations, the cause specific mortality flowing from MCCD is far from satisfactory. The gap was bridged to an extent by the 'Survey of Causes of Death' undertaken in sample villages of selected Primary Health Centres (PHC) in rural areas. However, the 'Survey of Causes of Death' had been merged with the Sample Registration System (SRS) from 1999, thus encompassing both rural and urban areas. Since then, a system of Verbal Autopsy under the domain of SRS has been in operation. In order to effect improvement in the system, the Office of the Registrar General, India (ORGI) in collaboration with the Centre for Global Health Research (CGHR), University of Toronto has been trying to establish a reliable system to measure the causes of death in the country. This is the Second Report on Causes of Death in the country, following the Maternal Mortality Report which was released in October 2006.

Methods:

The Special Survey of Deaths (SSD), undertaken in 2001-2003, has been carried out under the domain of Sample Registration System (SRS), which covered over 6,645 small areas (sample units) in all the States and Union Territories. The causes of death have been determined using an advanced form of Verbal Autopsy called the "RHIME" or Representative, Re-sampled, Routine Household Interview of Mortality with Medical Evaluation method. The SRS field staff that have been trained extensively for collection of the symptoms, signs and key circumstances leading to death using a two-page structured form with a brief narrative in local language, have undertaken the survey. A random sample of about 5-10% of the units has been re-

surveyed by an independent team to ensure the quality of fieldwork, completeness and accuracy. The assignment of causes of death has been done through a medical evaluation by two independent trained physicians who have examined the field reports using a web-based system developed specifically for the study. The cases resulting into continuing disagreements were referred to a third physician to adjudicate the final ICD-10 code.

Results:

- ✦ Overall non-communicable diseases are the leading causes of death in the country, constituting 42% of all deaths. Communicable, maternal, perinatal and nutritional conditions constitute another 38% of deaths. Injuries and ill-defined causes constitute 10% of deaths each. However, majority of ill-defined causes are at older ages (70 or higher years) and most of ill-defined deaths are likely to be from non-communicable diseases.
- ✦ In the EAG states and Assam, there is a significantly higher proportion of all deaths due to communicable, maternal, perinatal and nutritional conditions (50%) vis-à-vis 28% in the Other States. In the case of non-communicable diseases, it is the Other States which have a higher proportion (50%) vis-à-vis the EAG states and Assam (33%). Though the gap of 17% in the category is lower than that of the communicable diseases between the two groups of states, it is still significant. The mortality due to injuries is also more in proportion in Other States.
- ✦ Rural areas report more deaths due to communicable, maternal, perinatal and nutritional conditions (41%). The urban areas have a lower number of deaths from communicable, maternal, perinatal and nutritional conditions but a higher proportion from non-communicable diseases (56%). Their proportion is less in rural areas (40%). Injuries constitute about the same proportion in both rural and urban areas; however, the specific causes of injury vary.
- ✦ Overall, the leading cause of death is cardiovascular disease (19%), followed by respiratory diseases (namely chronic obstructive pulmonary disease or COPD, asthma, other respiratory diseases; 9%), diarrhoeal

diseases (8%), perinatal conditions (6.3%), respiratory infections such as acute pneumonia (6.2%), tuberculosis (6%), malignant and other neoplasms (5.7%), senility (5.1% – which is concentrated at ages 70 and higher), unintentional injuries: other (4.9%), and symptoms, signs and ill-defined conditions (4.8%).

✳ Notable differences by gender are seen in the case of diarrhoeal diseases with 10% of female deaths against 7% of male deaths, tuberculosis with 5% of female deaths vis-à-vis 7% male deaths, and cardiovascular diseases with 17% female deaths versus 20% male deaths.

✳ Among children aged 0 to 4 years, the top 10 causes of death are:

- Perinatal conditions (33%),
- Respiratory infections (22%),
- Diarrhoeal diseases (14%),
- Other infectious and parasitic diseases (11%),
- Symptoms, signs and ill-defined conditions (3.4%),
- Unintentional injuries: other (3.2%),
- Nutritional deficiencies (2.8%),
- Malaria (2.7%),
- congenital anomalies (2.7%), and
- Fever of unknown origin (1.5%).

Deaths due to perinatal conditions constitute a higher proportion among males with vast majority of these deaths concentrated in the first month of life. However, deaths on account of most of the other causes are higher in proportion among females.

✳ Among infants, the top 10 causes of death are:

- Perinatal conditions (46%),
- Respiratory infections (22%),
- Diarrhoeal diseases (10%),
- Other infectious and parasitic diseases (8%),
- Congenital anomalies (3.1%),
- Symptoms, signs and ill-defined conditions (3%),
- Nutritional deficiencies (2%),
- Unintentional injuries: other (1.4%),
- Malaria (1.1%), and

- Fever of unknown origin (0.9%).

Deaths due to perinatal conditions are in a higher proportion among males whereas deaths due to most of the other causes are higher in proportion among females as is observed in the case of children aged 0 to 4 years.

✳ Among children aged 1 to 4 years, the top 10 causes of death are:

- Diarrhoeal diseases (24%),
- Respiratory infections (23%),
- Other infectious and parasitic diseases (16%),
- Unintentional injuries: other (8%),
- Malaria (7%),
- Nutritional deficiencies (4.8%),
- Symptoms, signs and ill-defined conditions (4.5%),
- Fever of unknown origin (3%),
- Digestive Diseases (1.7%), and
- Congenital anomalies (1.5%).

The proportion of deaths from the top10 causes except for unintentional injuries: other; symptoms, signs and ill-defined conditions; and congenital anomalies are higher among the females.

✳ Ages 5-14 is generally a period of lower mortality than at ages 0-4 years. The ten leading causes of death at ages 5-14 are:

- Diarrhoeal diseases (17%),
- Unintentional injuries: other (16%),
- Other infectious and parasitic diseases (15%),
- Respiratory infections (10%),
- Malaria (9%),
- Ill-defined conditions (5%),
- Motor vehicle accidents (4%),
- Cancers (2.9%),
- Digestive diseases (2.9%), and
- Fever of unknown origin (2.9%).

✳ The ten leading causes of death at ages 15-24 are:

- Intentional self-harm (16%),
- Unintentional injuries: other (12%),

- Symptoms signs and ill-defined conditions (7%),
- Motor vehicle accidents (7% - 12% in males versus 2% in females),
- Tuberculosis (7%)
- Maternal conditions (13% – for females),
- Cardiovascular diseases (6.3% – chiefly reflecting rheumatic or other inflammatory conditions),
- Diarrhoeal diseases (6.2%),
- Other infectious and parasitic diseases (4.8%), and
- Malaria (4.7%).

✳ In the age group 25-69, the mortality rate rises sharply. The leading causes of death in this age group are:

- Cardiovascular diseases (25%),
- COPD, asthma, other respiratory (10.2%),
- Tuberculosis (10.1%),
- Malignant and other neoplasms (9%),
- Symptoms signs and ill-defined conditions (5.3%),
- Digestive diseases (5.1%),
- Diarrhoeal diseases (5%),
- Unintentional injuries: Other (4.6%),
- Intentional self-harm or suicide (3%), and
- Malaria (2.8%).

Cardiovascular disease is the leading cause of death among males as well as females. The male-female patterns are similar, except for a notably higher proportion of female deaths from cancer (12%) vis-à-vis males (8%). In contrast, males have higher number of deaths from tuberculosis (11%) versus females (8%) and digestive diseases (6%) versus females (4%).

✳ The specific analysis of causes of death from tuberculosis, malaria, maternal conditions and HIV/AIDS shows that tuberculosis is the leading cause among these four conditions, causing about 6% of all deaths, and 10% at ages 25-69. Malaria follows it, causing about 3% of all deaths- with the caveat that the malaria diagnosis may represent other fevers that are not due to malaria. Maternal conditions account for 2% of female deaths at all ages, 3% at ages 25-69 and 9% at ages 15-49.

- ✦ HIV/AIDS is a direct cause of death in about 2.4% of deaths at ages 15-59 in the states with higher HIV prevalence namely Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Mizoram, Manipur and Nagaland. It is responsible for only 0.3% in the remaining lower prevalence states. These ratios are comparable to those observed differences in the antenatal clinic data from the National AIDS Control Organisation.

- ✦ There is a marked regional variation in the contribution of various causes to the leading deaths. Cardiovascular disease is the leading cause of death in the all regions of India, with the highest proportion in the Southern region (25%) and the lowest in the Central region (12%). The other prominent causes of death across different regions are respiratory diseases, diarrhoeal diseases, perinatal conditions, tuberculosis and cancer.

- ✦ Respiratory diseases account for substantial proportion of deaths in all the regions with the maximum reported in the Central region and the minimum in the North-Eastern region. The highest incidence of deaths due to diarrhoeal diseases is observed in Eastern region (10.4%) followed closely by Central (9.8%) and North-Eastern regions (9.2%).

- ✦ Diarrhoeal diseases account for more than 5% of the total deaths in North, West and Southern regions respectively. Perinatal conditions are responsible for the maximum proportion of deaths in Central region (7.9%) followed by West (7.3%), East (7%), North-East (6.1%), South (4.1%) and North (3.9%). The proportion of deaths attributable to tuberculosis ranges from 5.1% in Southern region to 7.2% in Central region. Cancer deaths are more pronounced in South, North, North-East and Western regions.

- ✦ In Eastern and North-Eastern regions, deaths due to malaria are notably higher at 6% and 5% respectively, of deaths due to all causes. In the Southern region, suicide constitutes nearly 5% of all deaths at all ages. Senility and ill-defined symptoms and signs constitute 8% to 12% of deaths across different regions with the highest (12%) in Southern region. The results are influenced by the age at death, with the States having higher proportion of older populations showing more deaths due to ill-defined causes.

Conclusion:

It is observed that large number of deaths in the country have been occurring in early ages as well as in middle ages, which is suggestive that proper medical attention and health care facilities can certainly help alleviate this situation. The findings of the Report highlight specifically the need for augmenting interventionist strategies and programs for reducing the mortality resulting from health problems in childhood. Similarly, there is a need to ensure that tuberculosis, HIV/AIDS and malaria programs as well as those addressing maternal mortality are implemented in areas afflicted by the problem to reduce the proportion of deaths taking place due to these diseases in the country. The spread of non-communicable diseases, particularly, the vascular, respiratory disease and cancers, which are causing maximum deaths in rural and urban areas across EAG states & Assam and the Other States, is another important finding of the Report.

There is, however, a need for a word of caution. The mortality results presented in the Report should be interpreted carefully as the chance of misclassification of causes is not completely ruled out. However, despite this limitation, the study brings out findings which should definitely help enrich understanding of the mortality situation and challenges thereof in the country.
