Cause-specific mortality and healthy life lost: issues and challenges

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After birth, death is the only certain vital event in the human life cycle and, if recorded and studied scientifically, could lead to an understanding that helps to increase productivity and life expectancy of future generations by avoiding preventable and premature morbidity and mortality.[1,2] Most developed countries have well established civil registration systems and cause of death data available, but low-income and middle-income countries (LMICs) are still lagging behind in recording and analysing births, deaths, and causes of death, for various reasons.[3] Because reliable data for policy making are scarce, most health policies and planning in LMICs are either not based on the actual data or are formulated by considering indirect estimates or model-based estimates, such as those from the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD). GBD estimates are derived from available data as well as econometric and other modelling techniques.[4]

GBD methodology is not feasible to replicate at the granular level because of financial, computational, and data constraints, especially in LMICs. Despite some criticism of GBD estimates due to ever-changing methodology,[5] the methodology is standalone and highly regarded by researchers and policy makers. Additionally, the Million Death Study (MDS) is a great effort and reliable source of data on causes of death for India.

In *The Lancet Global Health*, Geetha Menon and colleagues[6] proposed an alternative and simple method—the National Burden Estimates—to estimate disability-adjusted life-years (DALYs), years of life lost (YLLs), and years lived with disability (YLDs) using cause-specific mortality proportion, and demonstrated this method for India. They primarily triangulated data from various sources such as the UN World Population Prospects 2017, Census of India, Registrar General of India's Sample Registration System, and the 2010–14 MDS for this purpose. The National Burden Estimates approach is a welcome inititative because it provides an alternative, simple method of calculating disease burden estimates at the national and subnational levels. Considering the 2030 targets of the Sustainable Development Goals, countries need to increase efforts to improve health outcomes as well as continuous monitoring of the impact of various efforts at the national or regional level to further fine tune local programmes to meet these goals.[7] The concordance of GBD estimates with Menon and colleagues' estimates of YLDs varied widely; for some causes, this study overestimated compared with GBD, whereas for vision loss, a good concordance in YLDs was observed. The trend and pattern of region-specific mortality and disability estimates were similar to GBD estimates. However, there was a gap of 5 million DALYs between National Burden Estimates and those from GBD. Which of the two methods is most accurate is open to discussion.

Considering the poor performance of LMICs in quality and coverage of the civil registration system and financial and other resource constraints, it might be difficult to generate the reliable data required for the proposed new method. Most expenditure on health and statistical systems in LMICs is marginal compared with their total gross domestic product, and these countries might not have the capacity to initiate special mortality surveys without support from global funding agencies or philanthropic organisations.

Ideally, medically certified cause of death and civil registration systems should provide enough evidence for policy and planning, but many people, especially in LMICs, are still invisible and are dying without being entered into a civil registration system.[8] Cause of death surveys are based on verbal autopsy methods to assign cause of death, and these methods have their own limitations, with their accuracy also varying by cause.[9] Many countries such as India have initiated cause of death surveys because their medically certified cause of death programme is still facing quality and coverage issues.[1] Special mortality surveys might work as subsidiaries of civil registration and medically certified cause of death programmes for a short time, but in the long term, more emphasis must be placed on local solutions such as medically certified deaths in the civil registration system, especially for in-hospital deaths. As data are becoming more valuable in development and policy making, an ever-increasing emphasis has

been placed on new methodologies and computation techniques such as machine learning and artificial intelligence, and these might help to improve medically certified cause of death programmes and reduce the number of uncertified or poorly certified deaths.

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