Missing in the middle: measuring a million deaths annually in children aged 5–14 years

Premature death remains pivotal in health measurement. Mortality measures attract political attention as indicators of social and economic progress and they figured prominently in the Millennium Development Goals (MDGs). Despite its importance, we measure mortality poorly in most places: global coverage by civil registration and vital statistics (CRVS) systems is only 38%, and around a third of these deaths are captured on poor-quality systems. Progress in CRVS systems has been glacial: the global coverage of deaths that were registered in 2015 increased by only 2% from those in 2000. The MDGs did spur the development of alternative methods for measuring mortality, including the use of household surveys, censuses, health facility data, sample registration systems, and surveillance systems to better capture maternal, under-5, and HIV-related mortality. By contrast, deaths in older children and younger adolescents have received little attention.

The UN’s Global Strategy for Women’s, Children’s, and Adolescents’ Health, launched in 2015 with the Sustainable Development Goals, has now embraced older children and adolescents. All-cause mortality in children and adolescents aged 10–19 years, but not those aged 5–9 years, is now a core indicator. However, the welcome policy shift has brought attention to the previous neglect of older children and adolescents. Of the just fewer than 60,000 studies cited in PubMed regarding mortality in those aged 0–19 years that have been published since 2004, only 6% addressed those aged 5–19 years. Economic development and demographic change has been accompanied by an epidemiological transition that has brought mortality improvements in children younger than 5 years relative to those of older children. The resulting reversal in age-related mortality patterns in many countries means that it is timely to focus greater attention on mortality in older children and younger adolescents. In their study in The Lancet Global Health, Bruno Masquelier and colleagues from the UN Interagency Group for Child Mortality Estimation have addressed this challenge by providing valuable new estimates of mortality in children aged 5–14 years from 1990 to 2016.

There are difficulties in achieving valid mortality estimates in children and adolescents aged 5–14 years. Mortality during these middle years of childhood is considered to be low relative to that of younger children and older adolescents, and global measurement systems have therefore focused elsewhere. The result has been weak primary data—a point in the life-course where there is a developmental shift in causes of death. Across puberty, there are continued but reduced risks from common early childhood causes of death (such as diarrhoeal disease and lower respiratory tract infections) and increasing risks of death from adolescent and adult causes (injury, violence, and those related to pregnancy). Puberty is also a time when gender and socioeconomic differences in mortality emerge. These social determinants are likely to affect mortality differently in different places, meaning that sound primary data are essential, instead of relying on extrapolation from mortality estimates in younger children or adults.

Masquelier and colleagues extended the approach of Kenneth Hill and colleagues by including household survey and census data in their models. Relative to children aged 0–4 years, decreases in mortality from 1990 to 2016 were slower in children aged 5–14 years; however, this result was driven by decreases in under-5 mortality from 2000 following the introduction of the MDGs. Before the introduction of the MDGs, decreases in mortality were greater in older children and younger adolescents relative to those in children aged 0–4 years. Notably, more than half of all deaths in children aged 5–14 now occur in seven countries, with the overall burden moving over time to sub-Saharan Africa; both slower decreases in mortality and demographic shifts have contributed to this excess in mid-childhood mortality in Africa.

The study by Masquelier and colleagues illustrates the value of better use of existing data in estimating mortality in these middle years of childhood. The estimates are 19% higher than those for the 2016 Global Burden of Disease Study, and 21% lower than estimates from the World Population Prospects report, which indicates some convergence across measurement.
systems relative to the huge variation in estimates reported previously. However, there is still no overlap in uncertainty bounds, and marked differences remain in mortality estimates for sub-Saharan Africa, which is the region with the greatest premature mortality. For individual African countries, the differences between different mortality estimates are even greater, suggesting that current data remain inadequate for guiding policy.

Further progress will require better primary data on all-cause mortality and causes of death, on which good data are even more scarce. Masquelier and colleagues suggest greater sharing of microdata, extending the use of sibling histories (on the survival of brothers and sisters), and greater use of censuses. Other strategies might include the use of network survival methods and extension of verbal autopsy into sample registration and CRVS systems. Causes of death in children aged 5–14 years are between those of children younger than 5 years and older adolescents, so there would be value in extending surveillance methods used in younger and older age groups. For example, extending surveillance networks that have focused on diarrhoeal disease in children younger than 5 years would bring an understanding of causes in older children and adolescents. Similarly, the number of deaths from maternal causes or due to violence or road traffic injuries are likely to differ from those at older ages, suggesting value in extending surveillance efforts to these younger groups.

The improved use of existing data in the study by Masquelier and colleagues brings us a step forward in understanding mortality in these neglected middle years of childhood. However, in their Viewpoint in 2018, Ties Boerma and colleagues articulated the limits of modelling mortality in the context of scarce primary data. Their call for a rebalancing of investments in health measurement, from the production and dissemination of estimates to increasing the resources for generating, analysing, and using data has particular salience in those aged 5–14 years, whom the lack of primary data continues to leave invisible to governments and donors.

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We declare no competing interests.

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