

Using verbal autopsy to enhance mortality surveillance



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Reliable and timely mortality data are necessary for assessing the effectiveness of health programmes and guiding health policy¹ and resource allocation. Civil registration and vital statistics (CRVS) are the primary source of mortality data for high-income countries that have well-established CRVS systems. However, low-income and middle-income countries, particularly those in sub-Saharan Africa, have weak CRVS systems limited by under-reporting and poor quality data, particularly for causes of death.² WHO estimates that only 10% of deaths in the African region are registered, with only 8% of those having a documented cause of death.^{2,3} Furthermore, more than two thirds of registered causes of death are not medically certified. Verbal autopsy with a simple instrument developed for electronic capture of illness information is recommended for identifying cause of death if medical certification has not been done or is not available.⁴

In the *Lancet Global Health*, Yue Chu and colleagues⁵ report their findings from an analysis of demographic and verbal autopsy data from nine health and demographic surveillance system (HDSS) sites, which belong to the Analysing Longitudinal Population-Based HIV/AIDS Data on Africa (ALPHA) network, across six countries in eastern and southern Africa. These 9 HDSS sites had a combined population of 1 071 913 people over the study period. Chu and colleagues calculated all-cause mortality rates for each HDSS by sex, age group, and 5-year calendar periods from 1995 to 2019. Using the InSilicoVA algorithm, they assigned causes of death and applied cause-specific mortality fractions to estimate population-level cause-specific mortality rates.

This analysis included 52 484 deaths, of which 47 961 (91.4%) had verbal autopsy results. Of those with a verbal autopsy, 46 570 (97.1%) had their cause of death identified. Chu and colleagues found a reduction in all-cause mortality rates over time in all age groups, all HDSS sites, and in both men and women. The decrease in all-cause mortality was most pronounced among people aged 20–59 years and between 2005 and 2009. These findings suggest substantial progress in achieving Sustainable Development Goal 3. The periods with the greatest reduction in all-cause mortality rates also corresponded to the largest reductions in HIV and

TB cause-specific mortality rates. Consequently, Chu and colleagues attributed the reduction in all-cause mortality in these sub-Saharan African countries to improved availability of efficacious treatments for these leading causes of death. Although non-communicable diseases were the predominant causes of death among adults aged 60 years and older in all sites, the non-communicable disease-related mortality rates did not increase over time in most of the HDSS sites. However, trends in maternal mortality varied by site; some sites showed no significant changes while others reported a decrease.

This study was conducted at a time when there is growing attention towards strengthening mortality surveillance and use of mortality data for decision making, particularly in African countries. The Africa Centers for Disease Control and Prevention, through their mortality surveillance programme, is engaging with ministries of health to explore the potential utility of HDSS platforms in improving national mortality statistics.⁶ The Article by Chu and colleagues⁵ has effectively showcased the potential value of HDSS verbal autopsy data to improve the estimation of mortality rates and causes of death in countries with weak CRVS systems. Such data could be instrumental in defining priority health problems and evaluating the effect of public health programmes and provide data for guiding national policy.

Although verbal autopsy is a convenient and cost-effective approach to identifying causes of death in HDSS platforms, postmortem examination of tissues combined with clinical information is the gold standard for cause of death determination.⁷ In our opinion, the accuracy of cause of death data from these HDSS sites could have been improved by including postmortem data, particularly from HDSS sites that have minimally invasive tissue sampling (MITS) for community-based and facility-based deaths. The Child Health Mortality Prevention Surveillance (CHAMPS) is working with seven HDSS sites in sub-Saharan Africa and southeast Asia to provide accurate cause of death information based on MITS with extensive laboratory testing.^{8,9} The inclusion of HDSS sites that participate in postmortem studies, such as the CHAMPS sites, could have provided additional insights on causes of death, including detailed information on causative agents. The use of this

postmortem data, through machine learning, could be maximised to enhance the accuracy of verbal autopsy cause of death algorithms.

These exciting findings by Chu and colleagues strongly support the need for regular analyses of verbal autopsy data from HDSS sites. By providing accurate information on the changing patterns in causes of death over time, such analyses could significantly guide national and regional public health programmes in allocating resources and developing targeted interventions.

We declare no competing interests.

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