Non-traditional data sources for injury control: an agenda for action in Ghana

We believe that one important reason for the low priority assigned to national safety programs in low and middle income countries (LMICs) is that reliable estimates of the burden of injuries are not available. Although official government statistics in many LMICs are sometimes available, most researchers agree that injuries are grossly under-reported. The development of traditional injury surveillance infrastructure to remedy these shortcomings is prohibitively expensive. However, one efficient way to rapidly improve the availability of injury statistics is to make creative use of non-traditional information sources. In this essay, we illustrate this approach for Ghana, where Salifu *et al*[1] have shown substantial under-reporting of injuries in official statistics.

VITAL REGISTRATION

In most developed countries, vital registration (VR) systems provide reliable information on the causes of most deaths. Unfortunately, in most of the developing world, VR coverage is so low that the data are never used for traditional cause-of-death analysis. Nevertheless, VR systems do operate in the towns and cities of Ghana and many other countries in Africa. Although incomplete, they could provide valuable insights into causes-of-death for selected urban populations. At present, however, VR data from Ghana include many deaths with 'unspecified' causes and many injury deaths with reported nature of injury codes (eg, head injury) rather than external cause of injury (eg, fall). Targeted efforts at improving coding at hospitals and national VR offices can substantially improve data quality.

MORTUARY SURVEILLANCE

Mortuaries associated with most major hospitals in Africa conduct medico-legal investigations of deaths that occur without a history of disease. Causes-of-death, recorded as part of routine administrative record keeping, are a potentially useful but untapped source of high-quality information for injuries in cities. In Ghana, several studies[2] have used data digitised from the Komfo Anokye Teaching Hospital in Kumasi for investigating injury mortality patterns. As in other countries, the underlying paper records in Ghana do not use a standardised cause-of-death listing. Computerised record keeping at Komfo Anokye Teaching Hospital and other mortuaries using the WHO standardised form (forthcoming) could provide a steady stream of high-quality injury data.

HEALTH AND DEMOGRAPHIC SURVEILLANCE SITES

Africa has a network of health and demographic surveillance sites (HDSS) sites that typically monitor morbidity (periodic questionnaires) and mortality (continuous verbal autopsy) in selected rural populations, presenting an untapped infrastructure for rural injury surveillance. In Ghana, there are HDSS sites at Navrongo, Dodowa and Kintampo. Our evaluation of cause-of-death data from Navrongo shows that injuries are poorly coded and their morbidity records have never been used for injury research. Information about rural injuries could be significantly improved if local injury researchers were to collaborate with HDSS sites to improve coding of injury deaths, and implement injury modules to identify risk factors for morbidity. A pilot study is under development at Navrongo to test collection of injury data.

NATIONAL HOUSEHOLD SURVEYS

Nationally representative household surveys are commonly conducted by national agencies to monitor population living conditions. These surveys typically include a health module with a few questions on non-fatal injuries. The following surveys with questions on injuries have been conducted in Ghana in the last decade: Core Welfare Indicators Questionnaire (2004), a World Health Survey (2002), a Demographic Health Survey (DHS; 2003, 2008) and a Living Standards Measurement Survey (2005). However, as is the case in most LMICs, survey instruments were not standardised and this substantial investment resulted in poor cross-survey comparability. Further, the surveys failed to incorporate well-established advice from the injury community (eg, use of appropriate recall periods[3]). In addition to deploying standardised methods, researchers should lobby for the inclusion of longer injury modules in at least one of the upcoming national surveys, as was done in the Mozambique DHS.

Targeted changes can improve the quality of information flowing from the existing infrastructure of Ghana. However, large gaps in knowledge will remain after such incremental improvements, leaving many opportunities for creative research. For instance, measurement studies that strategically sample populations should be used to make the data from existing sources representative at the national level. These include studies that estimate completeness and coverage of the data, test the quality of cause-of-death data, and correct biases (age, sex, causes). Linking data across these sources could reveal hidden burdens and identify risk factors. In addition, there are emerging leapfrog technologies that could allow major structural improvements in these data structures at relatively low cost. The use of mobile telephones for surveillance (mHealth) for electronic data recording and communication to a central registry has the potential to dramatically improve data coverage, quality and timeliness.

Strengthening the existing information infrastructure is the most efficient way to rapidly improve available knowledge of injury patterns in many LMICs.The data systems discussed here involve a wide range of national (statistical agencies, medico-legal systems and health ministries, among others) and international actors (WHO, World Bank, among others). A concerted effort, directed at the national and international stages, is needed to improve the availability of information for guiding policy and allocating scarce resources.

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