

Potential and limits of verbal autopsies

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The idea of assessing causes of death by retrospective interview is as old as medical statistics. In 17th century London, so-called death searchers visited the houses of people who had died to make enquiries about the death, especially about communicable diseases. In the 19th century, modern systems of death registration saw the end of this practice in Europe; but in developing countries, which lack the medical capacity to produce death certificates for the whole population, there is still a need for lay investigations into cause of death.

Pioneer projects in the 1950s and 60s in Asia (Khanna and Narangwal in India, Companiganj in Bangladesh) and in Africa (Keneba in the Gambia) used systematic interviews by well trained physicians to assess causes of death. Workers at the Narangwal project christened this new technique “verbal autopsy”. However, in-depth interviews by research physicians are costly and can not be replicated nationwide, and sometimes involve biases linked to the focus of the research.

Systematic investigation of causes of death on a larger scale became possible with the use of questionnaires. Questionnaire-based verbal autopsies have several advantages over ad hoc investigations. For example, they allow all available information to be recorded and, although data derived from these interviews do not constitute formal proof, they do allow objective decisions about probable cause. WHO has long recommended the systematic recording of signs and symptoms for assessing causes of death, and has proposed structured questionnaires for use in developing countries.¹⁻³

When the list of target diseases is extensive, questionnaire-based verbal autopsies may, in principle, ensure high specificity. They can be administered by lay people, and qualified personnel need only read the forms and stories. They also allow statistical analysis and the use of systematic algorithms. Many questionnaires have been developed

since the Reproductive Age Mortality Studies (RAMOS), Matlab, and Niakhar questionnaires were produced in the late 1970s and early 80s. These tools are now used in many research settings, such as the INDEPTH network, and also in national or large-scale regional surveys (such as in Morocco, India, and China).⁴

Verbal autopsies are of optimum value when they are applied to all deaths in a population, which is crucial in situations where only a fraction of deaths are registered or occur in hospitals. However, there are limits to the use of verbal autopsies.

First, they require skilled field-based personnel to record evidence as well as office-based staff to assess cause of death, and to code and analyse data. Second, the list of causes of death that can be assessed by verbal autopsy is only a small sample of the list of causes used on medical certificates. Third, the quality of the assessment depends on sensitivity and specificity of each diagnosis. While they work well for some diseases of high public health importance (such as measles, whooping cough, tetanus, cholera, and dysentery) as well as for accident and violence, the use of verbal autopsy is more problematic with diseases that have less specific symptoms, but which are equally important (such as HIV/AIDS in children, malaria in adults, and cancers). Fourth, the coding of verbal autopsy causes has never been made systematic, although it could be made so with the inclusion of rules for assessing “underlying”, “immediate” and “contributing” causes.

Among the key criteria for ensuring high value of verbal autopsies are the standardization of methods and the precision of the diagnosis and the coding. Indeed, large categories such as “rash disease” have little value when measles and chickenpox could be distinguished; or as “diarrhoeal diseases” when one could specify cholera, dysentery, acute watery diarrhoea or chronic diarrhoea. Some projects even use a probabilistic approach to distribute a single death to

several causes, which prohibits comparisons with other studies. Finally, some projects distribute deaths of “other and unknown” cause among the causes already assessed, which causes a serious bias in results. A better approach would be to assign “other and unknown” causes to categories of disease that are not possible to assess with verbal autopsy, and only the “no answer” could reasonably be distributed to the list of already assessed causes.

Some investigators advocate the use of algorithms to save time and to make more standardized diagnoses. However, judgements made by two or three independent physicians have been shown to produce better results. A knowledgeable physician reading a verbal autopsy form will understand the logic of the case and will see the abnormal elements and the contradictions. Use of a computer program to anticipate all the possibilities seems too complex to be practical.

Verbal autopsies allow identification of major health problems, comparisons of local and national differences in mortality ratios, the monitoring of trends over time, and the evaluation of interventions and health programmes. However, the usefulness of verbal autopsies depends on quality and standardization. If poorly conducted, they can produce misleading results. The issues of quality assurance and systematic coding are the main hurdles to overcome before their universal use can be recommended. These issues could be addressed through the development of guidelines for coding and launching validation studies to compare verbal autopsy diagnoses with medical diagnoses, and to compare distributions of causes of death derived from verbal autopsy with that from a gold standard, where it exists. There will always be biases in verbal autopsies, but in order to interpret their results correctly, these biases need to be understood. ■

References

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