



REVIEW ARTICLE

VERBAL AUTOPSY: LET US ENQUIRE FOR THE DECEASED

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ABSTRACT

Globally, two-thirds (38 million) of 56 million annual deaths are still not registered and almost half of the world's children go unregistered. Various systems for recording and reporting the vital events are well evolved in the industrialized, developed countries while they are still in the primal form in the developing countries. Information on vital statistics directs the policies and programmes of a country. Verbal autopsy (VA), defined as a method of obtaining as much information as possible about a deceased person by asking questions from family and others who can describe the mode of death and circumstances preceding death, may be used a surrogate for death certificates in ascertaining causes of death in countries with inadequate registration. Information on conditions causing death as well as those contributing to death should be collected using standardized VA formats and categorized according to the codes and rules defined within the International Classification of Diseases and Related Health Problems 10th edition (ICD 10).

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INTRODUCTION

There has been a universal recognition of the importance and need for the registration of vital events, namely, births, deaths, marriages and divorces. Virtually every country in the world has promulgated laws for establishing a national civil registration system for documenting juridical facts about vital events and to use these data for the compilation of vital statistics¹. Such systems for recording and reporting the vital events are well evolved in the industrialized, developed countries. The individual vital records and the statistics derived there from play an essential role in various national programs in the industrialized countries (http://unstats.un.org/unsd/demographic/CRVS/IIVRS%20papers/IIVRS_paper28.pdf)¹. There is need for similar uses of vital records and statistics in the developing countries like India. As a result, the vital records and statistics are of limited use in social and economic developmental planning. The births, adoptions, legitimations, deaths, stillbirths, marriages, and divorces come within the scope of vital events. The statistical information on births and deaths determine the population growth. All the other vital events such as marriage, divorce, adoption, or legitimation result from a legal proceeding conducted by authorized officials (http://unstats.un.org/unsd/demographic/CRVS/IIVRS%20papers/IIVRS_paper28.pdf).

Although complete and reliable mortality statistics are the backbone of population health assessment, program evaluation and epidemiological research; mortality data are often poor in developing countries because of inadequate death registration (<http://www.ncbi.nlm.nih.gov/pubmed/18031198>). This may be attributed to the fact that birth and death registration require motivation of the general public. Globally, two-thirds (38 million) of 56 million annual deaths are still not registered and almost half of the world's children go unregistered (<http://www.who.int/mediacentre/factsheets/fs324/en/>). This inadequacy in vital statistics registration is more of concern in the developing countries. It is seen that in the countries with the highest burden of disease, cause-specific mortality data are usually of poor quality, incomplete, or unavailable. What information does exist is often out of date, applicable only to major urban areas, and not sufficiently disaggregated to differentiate between important population sub-groups (http://apps.who.int/iris/bitstream/10665/66081/1/WHO_CDS_CSR_ISR_99.4.pdf). Identifying the causes of death by age, sex and cause in a population is critical to inform planning, resource allocation program implementation, monitoring, and evaluation (Lopez, 2006). Also, reliable information on cause-specific mortality is crucial for summarizing the total disease burden in different settings. In a 2003 WHO Director General highlighted the urgency of improving knowledge about vital events by saying "To make people count, we first need to be able to count people" (Lee, 2016). Improving the monitoring of vital events, and generating representative mortality

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statistics in lower-income countries in particular, will require new techniques, new technologies, and new thinking about sustainable, representative, and reliable systems for registering deaths and determining causes (Setel, 2005). The vital registration system in India has been estimated to complete in only be 50% of all deaths (Government of India, 2005). Reliable, medically certified cause of death data are available only in 14.5% of all registered deaths (Jha, 2009). As most of the deaths in the rural areas occur at home and a medical certification by a qualified practitioner is not possible, there is a need for “verbal autopsy”. Verbal autopsy (VA) is defined as a method of obtaining as much information as possible about a deceased person by asking questions from family and others who can describe the mode of death and circumstances preceding death (Stedman, 2006). In many of the developing countries verbal autopsy may be used a surrogate for death certificates in ascertaining causes of death. In simpler words, VA is a systematic retrospective inquiry of the family members about the circumstances, events, symptoms, and signs of illness prior to death to help determine the underlying cause of death and to classify the broad patterns of mortality. Information on conditions causing death as well as those contributing to death should be collected using standardized VA formats and categorized according to the codes and rules defined within the International Classification of Diseases and Related Health Problems 10th edition (ICD 10) (World Health Organization, 1992). Methods for interpreting verbal autopsy (VA) that have been validated fall into two major categories: (1) physician-certified verbal autopsy (PCVA), the commonly used method in which one or more physicians ascertain causes of death based on their clinical judgment; and (2) computerized coding of verbal autopsy (CCVA), in which causes of death are derived using predefined criteria. Decision rules for CCVA can be expert opinion based or data driven. The accuracy of these VA interpretation methods varies depending on causes of death per se, while the effect of misclassification error in VA on the estimates of cause-specific mortality fractions (CSMF) depends on the distribution of causes of death. The importance of acknowledging the effects of misclassification of causes of death by VA has been highlighted by the recent controversial estimates of malaria mortality in India (Valecha, 2011).

Verbal autopsy has been used for a variety of purposes, all of which require arriving at a diagnosis for the cause of death i.e. to provide data on mortality by cause, to evaluate health interventions aimed at reducing mortality from specific causes of death, when these interventions are being introduced into a limited geographic area on a trial basis, to identify ways to reduce unnecessary deaths by combining a verbal autopsy questionnaire with a household questionnaire asking about steps taken by the family and by the health services during the illness preceding death can make it possible to identify problems relating both to health-seeking behaviour and health service provision and finally to facilitate research into factors associated with mortality from specific causes of death⁴. The verbal autopsy has been used to estimate cause-specific mortality in a variety of methodological settings, the most common being in the context of an epidemiological study. Estimates of cause-specific mortality from these studies are not necessarily generalizable to a wider population (Morris, 2003). While a biological complication is assigned as a cause of death, in fact most child deaths result from a chain of events that includes many social, cultural and medical factors which are usually referred as ‘delay’ leading to the death. Some of

these can be prevented by taking action at one or more of the links in the chain of events that result in death, with a focus on the three delays in receiving care for a complication. These include: (A) First delay - decision making process (especially getting complicated if the child is a female), not recognizing or understanding the danger signs, using traditional home care or informal service providers. Low education and poverty could aggravate this. B) Second Delay – lack of transport, poor roads, long commute to the nearest health facility, or delay in organizing funds if they have to pay for it. (C) Third Delay – lack of medicines, blood, consumables, skilled manpower, etc (<http://nrhm-components/rmnc-h-a/maternal-health/guidelines.html>). There are several possible approaches to data collection. The interviewer may discuss the events that preceded death with a child’s mother or family and record the narrative in open ended form. Alternatively, a series of closed questions may be asked, designed to establish the presence or absence of specific signs and symptoms, or particular health care actions (Quigley, 1999 and Freeman, 2005). Because vital registration coverage has not significantly improved in developing countries, interest in verbal autopsy (VA) methods has expanded to at least four distinct settings: clinical trials and large-scale epidemiological studies, demographic surveillance systems, such as those in the INDEPTH network (<http://www.indepth-network.org/Resource%20Kit/INDEPTH%20DSS%20Resource%20Kit/INDEPTHVerbalAutopsyInstruments.html>), national sample surveillance systems (Jha, 2006 and Rao, 2005), and household surveys (Khoury, 1999). Despite increasing and widespread use of VA in field data collection, utilization of VA data for national epidemiological monitoring and global/regional burden of disease estimation has so far been limited. For example, WHO makes almost no use of VA data for adult cause of death estimation because of the heterogeneity of VA implementation and non-ICD (International Classification of Diseases) cause lists. A notable exception has been the use of VA data (for under-age-5 cause of death) to dramatically reduce global estimates of measles mortality in children (Black, 2003). The WHO came up with the VA tool in 2007 that had been used to collect data on CSMR. This tool was later revised in 2012 and in 2014. The revised 2014 tool has been in use to collect VA data globally. Verbal autopsy (VA) tools have open-ended narrative part to note verbatim account of respondent’s version regarding the illness preceding the death; and a structured part to ask disease specific questions from the respondent. Main questionnaire have 10 sections to record interview’s details, respondent characteristics, age and place of death, narrative verbatim account of the illness preceding the death, maternal history during pregnancy labour and delivery, complications that occurred during labour and delivery, newborn’s details at birth and its status after birth, events immediately after birth like - was baby able to breathe immediately after birth, any assistance given to the baby to help him/her breath, questions on cry at birth, details of neonatal illness that led to death, and any treatment received (Aggarwal, 2013). Although optimum sample size and appropriate disease classification are critical design components of a mortality surveillance system, they are not sufficient without an instrument for obtaining reliable information on cause of death. The verbal autopsy works best for diseases that manifest with a well well-defined and unique set of symptoms, such as measles and accidents. The verbal autopsy is less able to discriminate between diseases with overlapping symptoms, such as malaria and pneumonia, or HIV/AIDS and tuberculosis. If there is misclassification between different causes of death using a verbal autopsy

instrument then substantial errors will arise in the estimates of cause-specific mortality fractions and it is difficult to adjust for this misclassification (Anker, 1997 and Chandramohan, 2001). The accuracy of the verbal autopsy may also vary between settings, and, therefore, it should be validated in the settings where it is used. Identifying methods for obtaining reliable information on cause-specific mortality remains an important research priority, as does the validation of such methods when used in different settings.

Conclusion

Verbal autopsy tools provide reasonably good estimates about predominant causes of deaths in the setting where cause specific mortality fraction is high due to these conditions. Use of multiple causes of death gives relatively better diagnostic accuracy of verbal autopsy compared to the use of single underlying cause. Further validation studies in different groups of populations and geographic areas will help in generalization of the findings related to validity of verbal autopsy tools for ascertaining the causes of deaths.

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