Assessing the quality of evidence for verbal autopsy diagnosis of stroke in Vietnam

Gupta S. *et al*. look critically at verbal autopsy (VA) as a means of identifying patients dying from stroke in Vietnam.[1] This is an interesting paper about an important subject area. As the authors point out, medically-certified cause-of-death data are available for less than one third of the deaths occurring worldwide. Lack of medically-certified data is a major problem in developing countries, including Vietnam. In such places, VA is the method of choice to ascertain cause of death. A semi-structured interview is carried out with family members about symptoms, signs and circumstances leading up to death.[2] It is dependent on symptoms and signs prior to death being recognized, recollected, and reported by a person present at that time.[3] The data are then usually reviewed by independent physicians who ascribe the most likely cause of death. The accuracy of VA is dependent on many things including the diagnosis in question, the VA methodology (balance between structured questions and open ended interview), time of recall, presence of comorbidities, the training of the personnel carrying out the interviews and the understanding of the local population about the conditions in question, including understanding of terminology. As the authors point out, stroke is probably one of the most reliable diagnoses to make based on VA.

To validate the accuracy of VA for determining stroke deaths, the authors analyzed VA data from 4 provinces in northern Vietnam providing a sample size of 326, and demonstrated that VA diagnosis of stroke is generally very reliable, particularly if patients have been admitted to hospital. This included people who had had a hospital admission at least once at any time during their illness, and it is not surprising that these patients had a more accurate diagnosis. The people in whom diagnosis is most challenging are those who are cared for in the community without contact with established health facilities. In making a diagnosis of stroke paralysis of sudden onset is a key symptom as there are very few other conditions that produce this. For the cases with lower levels of evidence for stroke history of hypertension was included as very supportive of the diagnosis of stroke but hypertension is very common worldwide and, while being a risk factor for stroke, most people with hypertension will not have had a stroke. Only 55% of stroke cases with a positive response to paralysis had asymmetrical paralysis, which is unusual, as this is normally the case in the majority of stroke patients. Also, nearly a third had paralysis for more than 1 year, with the range extending up to 11 years, and only 42% had paralysis for less than one month prior to death. What this means is that many of the individuals may well have died of other causes but just happened to have had a stroke, with residual weakness, in the past.

It is important that methods for VA are rigorously assessed as the authors have done. In a VA validation study from South Africa, which included 86 patients with non-communicable diseases, a diagnosis of cerebrovascular disease in people aged 15 years or over had a sensitivity of 87%, specificity of 96%, and a positive predictive value of 81%.[4] In a study in China including 2,102 deaths cerebrovascular disease was diagnosed by VA in 398 patients and had a sensitivity of 82%, specificity of 94% and a positive predictive value of 76%.[5]

In order to be able to comment on the size of the problem, VA rates need to be based on an accurate knowledge of the size, and age structure, of the background population. Previous research utilizing VA diagnosis of stroke in Africa has established that age-adjusted stroke death rates are very high.[6] When conducting incidence studies in such countries, it is also necessary to use VA methodology in order to account for stroke patients who die before they can be seen by the study team, particularly if this is outside hospital.[7]

It is important to know about causes of death as this information can guide public health measures. The prevalence of stroke is increasing in developing

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countries due to changes in exposure to stroke risk factors, improved prevention and control of infectious diseases, and the survival of more people to older ages. The main modifiable risk factor for stroke is hypertension but in developing countries many people do not have their blood pressure measured and, even if they do, and are diagnosed to be hypertensive, may not start drug treatment. Even if drug treatment is commenced, many patients default as they may not understand the importance of anti-hypertensive treatment when they feel well, drugs may be too expensive and not always accessible, primary care services may not be geared up for managing hypertensives etc., However, lowering of blood pressure has been well demonstrated to lower stroke risk. This paper enhances our knowledge about VA diagnosis of stroke.

Richard Walker

Department of Medicine, North Tyneside General Hospital, Rake Lane, North Shields, NE29 8NH, UK

Address for correspondence:
Prof. Richard Walker,
Department of Medicine, North Tyneside General Hospital, Rake Lane, North Shields, NE29 8NH, UK.
Email: Richard.walker@nhct.nhs.uk

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