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Unintentional injuries over a 1-year period in a rural Vietnamese community: describing an iceberg

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Summary *Objectives*. To document unintentional injuries in a rural community over a 1-year period as a basis for prioritizing preventive activities.

Study design. Quarterly home visits over 1 year to elicit experience of injury among household members in the preceding 3 months.

Methods. In total, 24,776 people living in rural communities in the Bavi District, Northern Vietnam, were surveyed in home visits during 2000. In the home visits, injuries that needed care or disrupted normal activities were recorded, together with their circumstances.

Results. Overall, 2079 new non-fatal injuries were recorded over 23,338 person-years, a rate of 89/1000 person-years-at-risk. Males had a significantly higher injury rate than females for all age groups except for those aged 35–59 years and the elderly ($P<0.05$). The elderly were at highest risk of injury ($P<0.05$), particularly females. Home injuries occurred at the highest overall rate, particularly among the elderly. Road traffic injuries were most common among children. Most injuries involved contact with another object. Less than one-quarter of injury victims sought care at a health facility.

Conclusions. Community-based household surveys revealed the hidden part of the injury iceberg, as well as showing high incidence rates, indicating that injury is an important public health problem which should be a priority for intervention in rural Vietnam, and probably elsewhere. This comprehensive study is intended to contribute evidence and methods to the Ministry of Health's national programme for injury prevention, and to a wider audience.

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Ⱶ Sadly, our colleague Professor Ton That Bach died suddenly during the final stages of this study. His great contributions to the research community in Vietnam are sorely missed and we would like to dedicate this paper to his memory.

Introduction

Unintentional injury is a major global public health issue,[1] but its impact is often overlooked in poorer

countries due to inadequate or inaccessible health facilities and a lack of reporting systems.[2] Actual incidence thus varies considerably with recorded injuries in different settings, and statistical reports often only present the tip of the iceberg.[3] Reported patterns of injury that rely on retrospective health facility data should certainly be regarded with suspicion. Furthermore, rapid development and industrialization in many countries is profoundly affecting patterns of injury as occupational and lifestyle hazards change.[4]

In Vietnam, injuries are an increasing problem, particularly since *Doi Moi* political reforms started in 1986. From 1989 to 1998, police statistics showed an increase of 274% in fatal road traffic accidents and 404% in injuries. The rate of traffic accidents increased from 7.1 per 1000 inhabitants to 24.9, and fatalities rose from 3.9 to 7.4, giving Vietnam one of the highest rates in the world.[5] According to the Traffic Safety Community, there were 10,477 deaths due to traffic accidents in 2001.[6] The crude injury mortality rate in Vietnam was estimated to be 189/100,000 person-years from a cross-sectional survey.[7] Injury data from non-comparable sources have been variously reported from the Ministry of Health, the Ministry of Labour, Invalidity and Social Welfare, the Ministry of Transport and others.[8] This makes the planning and implementation of effective injury prevention very difficult. The Ministry of Health also initiated a national programme on injury prevention and safe communities in 1996, achieving remarkable results within a short time, although further studies and improvements are needed. Therefore, a priority for policy development is epidemiological research at the household level, to establish a more complete community-based picture of injuries in Vietnam[9] and thus characterize the submerged part of the iceberg.

An epidemiological field laboratory was established in Northern Vietnam in 1999. This study used that framework, building on a previously reported pilot study that presented methods and patterns of injury elicited from a single household survey using 3-month recall.[10] A longitudinal picture of household injury events during the year 2000 has been compiled from four quarterly surveys to give a comprehensive picture of all types and circumstances, and to identify risk groups, hazardous environments and major causes of unintentional injury in a defined rural Vietnamese community.

Methods

The study took place in Bavi District, Hatay Province, 60 km west of Hanoi, in Northern Vietnam. Bavi District has 32 communes and covers 410 km^2, including lowland, highland and mountainous areas, with a total population of approximately 235,000 in 1999. The commune is the lowest level of local government organization. In this mainly rural area, farming and livestock breeding are the main economic activities of 81% of the people, and the major products are wet rice, cassava, corn, soybean, green beans and fruit. The main income is from rice production, averaging 290 kg/person/year in 1996 (equivalent to approximately US$ 40). An epidemiological field laboratory was established in Bavi District in 1999, called FilaBavi. Surveillance initially covered about 51,000 people living in 11,000 households in a dynamic cohort formed by randomly selecting village clusters with probability proportional to size. This surveillance site is described in detail elsewhere.[11]

The following definitions were used in this study. Injury denoted the somatic medical consequences of an accident. An accident was defined as 'a sudden, unexpected series of undesired occurrences in the interplay between individual and environment which led to personal injury'.[12] The definition excluded intentional injuries. Unintentional injuries typically comprised road traffic accidents, poisonings, falls, burnings, scaldings, drownings and submersions, accidents caused by machinery, cutting and piercing instruments, plus all other accidents including late effects, drugs and medications causing adverse effects.

The injury questionnaire included details of place and mechanism of injury together with victims' activity at the time of injury according to the Nordic Medico-Statistical Committee (NOMESCO) classification.[13] Additional information on care-seeking behaviour, severity and consequences of injury was collected. Free-text descriptions were used to cross check information coded by interviewers. Background variables were available from routine FilaBavi surveillance. FilaBavi fieldworkers were specially trained for the injury questions and performed quarterly interviews in respondents' homes. At each interview, heads of household were asked whether any household member had sustained any non-fatal injury in the last 3 months, with the intention of interviewing each injury victim individually. If the injury victim was not at home or was a child (under 15 years), the head of the household or a household member who knew about the injury was interviewed as a proxy respondent.

An injury was included in the study when it was serious enough to meet any of the following conditions: need for any kind of medical care; need to stay in bed for at least 1 day; or need to stop