

# PostScript

## RESEARCH LETTERS

### Demographic risk factors in pesticide related suicides in Sri Lanka

Suicide rates in Sri Lanka (40 per 100 000) greatly exceed those of the United Kingdom (7.4/100 000), United States (12/100 000), and Germany (15.8/100 000).<sup>1,2</sup> A leading method of committing suicide in Sri Lanka is ingestion of pesticides, which are readily available in rural farming households. Self poisoning kills more people in rural Sri Lanka than ischemic heart disease and tropical diseases combined.<sup>3</sup> Although acute pesticide poisoning occurs at alarmingly high rates in Sri Lanka, it is also a major problem throughout the developing world. The worldwide incidence is three million cases and 220 000 deaths each year.<sup>4</sup>

Suicide attempts tend to be fatal, especially in the rural areas where rescue facilities are seldom available.<sup>4</sup> Further reasons for high mortality rates include the toxic nature of the substances involved, lack of antidotes, distances between hospitals and patients, and overburdened medical staff.<sup>4</sup>

This study analyzed raw data on pesticide related deaths in search of demographic risk factors contributing to these suicides in Sri Lanka during 2002.

#### Methods

Data were extracted from the Department of Police in Colombo, Sri Lanka, which reports total suicide case numbers and causes.<sup>5</sup> Population health data were provided by the Ministry of Health in Sri Lanka, Population Division.<sup>6</sup> Age standardized rates were calculated by multiplying the total case number for a given age group by 100 000 population, using numbers of actual population figures as the denominator.

#### Results

Age standardized rates showed differences in pesticide related suicides by gender and age (fig 1). Among Sri Lankan males the rates peaked between 60-64 years and males demonstrated higher pesticide related suicide mortality risk than females (rate ratio = 1.20, 95% confidence interval 1.10 to 1.31).

#### Discussion

Pesticide related suicide is a major problem in Sri Lanka where it is the cause of many deaths, particularly among males 40-54 years and in the elderly. Prevention strategies should target this population.

It is well known that most victims poison themselves with pesticides and herbicides, which are easily available because they are widely used on plantations.<sup>7</sup> Few protective measures are taken against ingestion as local populations tend to have the misguided belief that herbicides, pesticides, and toxic seeds do not cause pain when ingested.<sup>3,7</sup> The public must be educated about the long and short term effects of pesticides on health, particularly in these high risk populations. Mass media campaigns informing the public of the dangerous after effects of pesticides and proper pesticide handling procedures and storage may help.

Restrictions on pesticide availability are necessary for further prevention of these suicides. Eddleston *et al* suggested a model minimum pesticide list for use in developing countries to prevent mortality related to pesticides.<sup>8</sup> To be effective on a global level, the World Health Organization and Food and Agriculture Organization of the United Nations need to intervene to motivate local governments to implement this list.<sup>8</sup> In addition, governments should use pricing policies and differential taxation policies such as higher taxes and prices for potentially harmful pesticides to control their easy availability.

Given the complexity of the mechanisms involved in pesticide related suicide, it is likely that no single prevention strategy will

combat this critical problem. Rather, a comprehensive and integrated effort involving many domains—the individual, family, agrochemical industry, community, media, and health care system—is needed.

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#### References

- 1 Desapriya EBR, Iwase N. New trends of suicides in Japan. *Inj Prev* 2003;9:284.
- 2 Eddleston M, Shrif MHR, Hawton K. Deliberate self harm in Sri Lanka and overlooked tragedy in developing world. *BMJ* 1998;317:133-5.
- 3 De Silva H, Kasturiratchi N, Seneviratne S, *et al*. Suicide in Sri Lanka: points to ponder. *Ceylon Med J* 2000;45:17-24.
- 4 Jetyarathnam T. Acute pesticide poisoning: a major global health problem. *World Health Stat Q* 1990;43:139-44.
- 5 Department of Police. *Suicide related mortality data*. Sri Lanka: Colombo, 2002.
- 6 Population Health Database. Ministry of Health, Population Division. Sri Lanka: Colombo, 2002.
- 7 Bolz W. Psychological analysis of the Sri Lankan conflict culture with special reference to the high suicide rate. *Crisis* 2002;23:167-70.
- 8 Eddleston M, Karaliedde L, Buckley N, *et al*. Pesticide poisoning in the developing world: a minimum pesticide list. *Lancet* 2002;360:1163-7.

### Drowning deaths among Japanese children aged 1-4 years: different trends due to different risk reductions

Drowning, once by far the most important external cause of child deaths in Japan,<sup>1</sup> has reduced more rapidly than other injuries. Drowning mortality of children aged 1-4 years decreased from 45.4 per 100 000 in 1955, 4.5 times higher than that of traffic injuries, to 1.6 per 100 000 (ranking next to traffic injuries) in 2000. We could have achieved this by two main approaches: (1) environmental modification to reduce exposure to open water where most outdoor drownings occur<sup>2</sup> and (2) health education to reduce risk of bathtub drowning, which causes most of the domestic drownings.<sup>2,3</sup>

To know how these approaches contributed to the mortality reduction, we separately examined the trends of outdoor and domestic drowning mortality among children aged 1-4 years.

Data on drowning deaths were obtained from Vital Statistics compiled by the Ministry of Health, Welfare, and Labour. Drowning was classified as E code 910 in the eighth and ninth revision of the *International Classification of Diseases* (ICD-8 and 9) for the period 1967-94 and classified as code W65-74 in the 10th revision (ICD-10) for the period 1995-2001.

Population data, denominators of mortality rates, were from the national censuses for the years 1970, 1975, 1980, 1985, 1990, 1995, and 2000; and from the population estimations compiled by the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) for other years. Data on the proportion of houses

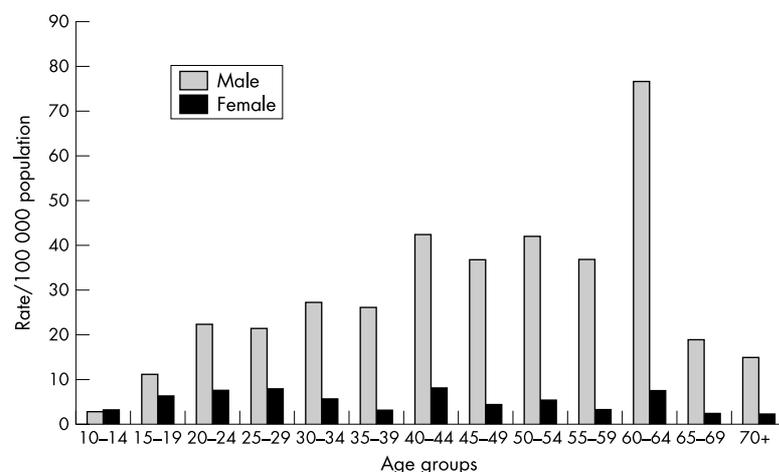


Figure 1 Age standardized rates for pesticide related suicides in Sri Lanka in 2002.