

Epidemiological profile of mortality due to injuries in three cities in the Guangxi Province, China

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Abstract

This study aimed to provide epidemiological information on injury mortality in three major cities in Guangxi Province of South Western China. This was a population-based descriptive study utilising surveillance and field-gathered data. Data were obtained from the disease surveillance information system and record on each death certificate. Mortality rates were compared between sex and among different age groups for different causes of injury. Regression modelling was applied to examine for any increasing trend of injury mortality within the study period. Drowning was a severe problem for boys and girls younger than 5 years. Among all estimated mortality rates (per 100,000 person-years) for all sex, age groups, and categories of death, they were the highest with a rate of 29.8 (95%CI = 16.7–42.9) for boys and 29.6 (95%CI = 15.9–43.3) for girls. The overall mortality rates of motor vehicle and other transport-related injury was also similar to those developed countries. There was a marginally significant trend of increasing injury mortality within the study period.

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1. Introduction

Injury has long been identified as a major category of mortality in most developed countries, and has also been recognised as an important emerging health problem in developing countries (Murray and Lopez, 1996). In the most recent study in China, injury was the fifth leading category of death for children and young adults under the age of 45 years (Ministry of Health, PRC, 2000). It has been estimated that about 5.1 million persons died of injury in China in 2000 with a mortality rate of 65.2 per 100,000 person-years (Nantulya et al., 2000).

There has been a growing interest in the study of injury deaths, morbidities and its burden in the community in terms of costs and productivity lost in China in the last decade (Li et al., 1997a,b, 1999; Yang et al., 1997; Lu et al., 1999; Yu et al., 1999; Zhang et al., 2001; Phillips et al., 2002; Chi

and Wong, 1996; Zhoo et al., 2001; Shen et al., 2001; Zhou et al., 2003). These studies provide general information on the categories of injury, mostly stratified by age and sex, and some provide data on the burden of injury using the method of years of potential life lost (Centers for Diseases Control, 1983) or potential production years of life lost (Rice, 1966). Due to the limitation of the length of the reports, details are generally lacking. A small number of studies that contain more detailed information have been identified, however, they are mainly reported in Chinese language journals (Li et al., 1997a,b, 1999; Yang et al., 1997; Lu et al., 1999; Zhang et al., 2001).

The aim of this study was to report detailed information about injury deaths in three major cities in the Guangxi Province of South Western China.

2. Methods

This population-based epidemiological study was conducted in the Guangxi Province of South Western China in

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2002. It included three major cities in the province: Guilin, Liuzhou, and Nanning with a combined population of about 3 million in 2000.

Subjects aged older than 1 and younger than 90 years with a category of death not due to natural diseases were selected to be included in this study. Information was obtained from the information systems of the disease surveillance centre in each city during the 5-year period from 1997 to 2001. These included age, sex, and the primary diagnosis of the cause of death for all death cases. Extra cases were identified from a survey of funeral parlours within the three cities. These were “died at scene” cases not transferred to hospitals, they were handled directly by funeral parlours. Death certificate of each case was also obtained from the hospital and the funeral parlour in which the case was registered and handled. Information collected from both sources was then matched for discrepancies. Any discrepancies of information between the official source and the death certificate were reconciled by reviews of medical records. Data were then computerised and information was encoded. The cause of death was encoded according to the International Classification of Disease – 10th Revision (ICD-10) (World Health and Organisation, 1992). The coding was conducted by trained medical personnel. Subjects satisfying the inclusion criteria with a cause of death ranging between V01-V99, W00-W99, and X00-Y36 were identified and included as the final sample. Population estimations for each year within the study period were based on the information provided by the bureau of statistics in each city.

Age- and sex-specific mortality rates per 100,000 person-years were calculated using the methods suggested by Rothman and Greenland (1998). These calculations were based on the conventional probability model for an observed number of cases having an underlying Poisson distribution (Rothman and Greenland, 1998). For comparison purposes, the age- and sex-specific mortality rates by category of injury were also calculated. To estimate any trend in mortality rates due to injury within the study period, analyses were conducted using Poisson regression modelling.

3. Results

There were 3954 deaths due to injuries to person from 1 to 89 years within a period of 5 years in three major cities in the Guangxi Province, China. As summarised in Table 1, the majority of deaths were males ($n = 2828$, 71.5%), nearly half ($n = 1894$, 47.9%) were aged between 25 and 49 years, nearly 10% ($n = 385$, 9.8%) were children under 15 years old. Motor vehicle and other transport-related injury were the most frequent cause that accounted for about 40% of the total deaths ($n = 1522$, 38.5%). The age- and sex-specific mortality rate (per 100,000 person-years) for each age group was calculated and depicted in Fig. 1. As shown, the mortality rates for males were consistently and significantly higher than those for females across all age groups except for the

Table 1

Age, sex and types of injury death in three major cities of Guangxi Province, China, 1997–2001 ($n = 3954$)

	Number (%)
Age groups	
1–4	107 (2.7)
5–9	141 (3.6)
10–14	137 (3.5)
15–19	267 (6.8)
20–24	480 (12.1)
25–49	1894 (47.9)
50–69	555 (14.0)
70–89	373 (9.4)
Sex	
Male	2828 (71.5)
Female	1126 (28.5)
Year of death	
1997	723 (18.3)
1998	708 (17.9)
1999	808 (20.4)
2000	847 (21.4)
2001	868 (22.0)
Types of injury	
Motor vehicle and other transport	1522 (38.5)
Falls	448 (11.3)
Poisoning	435 (11.0)
Drowning	424 (10.7)
Homicide/ assaults	291 (7.4)
Suicide/self harm	285 (7.2)
Others	549 (13.9)

youngest (1–4 years) and the oldest (70–89 years) age groups (Fig. 1).

In order to examine the profile of mortality rates between males and females across different age groups in more details, mortality rates were also calculated for different categories of injury death. Table 2 summarises the results obtained from these calculations. While different profiles of mortality rates between males and females were observed for different categories of injury, rates for 15–19 years, 20–24 years, and 25–49 years-old males were consistently and significantly higher than that for females of the same age groups for most categories of injury (Table 2).

The mortality rates profile of drowning seemed to suggest that it was predominantly a male problem. The mortality rates of drowning for males were significantly higher than that of females across nearly every age group except for the youngest (1–4 years) and older (50 years or above) groups with a magnitude ranging from 2 to 5 times (Table 2). The results also suggested that drowning is a severe problem for boys and girls younger than 5 years in this particular region of China. Among all estimated mortality rates for all sex, age groups, and categories of death, they were the highest with a rate of 29.8 (95%CI = 16.7–42.9) for boys and 29.6 (95%CI = 15.9–43.3) for girls.

The results also suggested that motor vehicle and other transport-related injury is the second most severe problem for the same age group with a mortality rate of 22.4 (95%CI

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