

CHAPTER 1
Epidemiology of Suicide in Asia

Herbert Hendin, Lakshmi Vijayakumar, José M. Bertolote, Hong Wang,
Michael R. Phillips, Jane Pirkis

Abstract

Although suicide in Asia is widely recognized as a compelling problem, obtaining accurate data about suicide in Asia has proved difficult. Some countries make no effort to collect data on the causes of death. In many Asian countries deaths occur without medical certification of the cause and may be reported by family members or other lay people who do not wish to acknowledge suicide for fear of stigma or shame. In many Asian settings suicide contravenes religious, cultural, or legal traditions (suicide is still criminalized in several countries) or is seen as a reflection of poor governance, so there is an understandable reluctance to compile and report accurate suicide statistics. This chapter discusses available rates and the issues involved in assessing their validity.

Suicide Rates

Taking the available data at face value, Table 1 presents the overall suicide rates for the participating countries. Wherever possible, and unless otherwise indicated, the latest official statistics are presented for the participating countries; footnotes indicate the source of the figures. Pakistan has the lowest estimated prevalence of less than 3 per 100,000, followed by Thailand at 7.3 per 100,000. Australia, Malaysia, New Zealand and Singapore have low to medium rates of between 9.9 and 13.1 per 100,000. Higher rates of above 15 per 100,000 are seen in China, Hong Kong Special Administrative Region (Hong Kong SAR), and India and still higher rates of above 20 per 100,000 are seen in China, Japan, the Republic of Korea, and Sri Lanka.

Quality of data

The validity of reported prevalence of suicide depends to a considerable degree on the method for determining the cause of death, the comprehensiveness of the death reporting system, and the procedures employed to estimate national rates based on crude cause of death data. Thus the reported prevalence of suicide for each country must be interpreted with some knowledge of the procedures used by that country. The Department of Measurement and Health Information of the WHO has developed a 4-level rating system for assessing the quality of death data (Mathers, 2005). Mortality

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data from Australia; China, Hong Kong SAR; Japan; Malaysia; New Zealand; the Republic of Korea; and Singapore are rated as level-1 or level-2 evidence, which means that they are considered reliable estimates of the cause of death and, thus, of the prevalence of suicide. The Japanese procedure described below is illustrative of level-1 evidence for this group; only recent changes in the recording methods in Malaysia and the Republic of Korea permit their reported rates to be seen as reliable.

In Japan a doctor must sign the death certificate in every case. If the death is certified as a suicide the police must be notified. If death occurs at home, and the patient is not under medical care, it must be reported to the police and a qualified medical pathologist (coroner) examines the body and determines the cause of death based on a history obtained from whoever can provide the most detailed information about the decedent's physical and mental health. If the cause is unclear, a pathological autopsy is conducted to help determine the cause of death. In such cases the medical pathologist issues the death certificate. A relative of the deceased must bring this certificate to a specified municipal office to obtain permission to bury the body. All the death certificates are sent to the Ministry of Health, Labour, and Welfare, which records all deaths in Japan. The Ministry issues regular reports on the causes of death each year and sends an official report to the World Health Organization. The National Police Agency also issues a report of deaths which includes more suicides because it includes foreigners who are not included in the Ministry's registry system.

In the Republic of Korea before recent changes which made the data more reliable, a death was reported by a family member, close friend or neighbour to the local public office. If a suicide was reported or suspected it was to be reported to the police. A physician could then be called in to examine the body and take a history from the closest available person. A suspected suicide might then be examined by a medical examiner or a forensic pathologist, but the examination would be waived if the family could prove the deceased had been in psychiatric treatment. Death certificates were filed with the Ministry of Health and official reports were released. Researchers in the Republic of Korea considered that the death registration and certification were incomplete since the cause of death was certified by a physician in only about 30 percent of cases (Suk, 1992; Ruzicka, 1998). The government recognized the inadequacy of the certification and made changes that culminated in a revision in 2000. An analysis of the certification data was made for us by a representative of the Korean National Statistics Office. The analysis indicated that the percentage of deaths

that were medically certified gradually increased from 74% in 2000, to 87% in 2003 (Nam, 2007).

Despite the relatively good mortality registration in Malaysia, its official statistics on suicide are still regarded as underestimates primarily due to misclassification. Systematic misclassification of medically certified suicides as ‘violent death from undetermined cause’ seems to be a primary factor in the reported drastic drop in Malaysia’s suicide rate starting in 1975. At the same time the ratio of uncertified to certified suicides went up four-fold after 1975 (Maniam, 1995). Non-reporting and under-reporting in predominantly Muslim countries have been attributed to religious, cultural, and legal factors (in Malaysia attempting suicide is illegal) (Khan, 2005), which are described in detail in Chapter 2 of this report.

The quality of evidence used in mortality estimates for four of the STOPS countries – China, India, Thailand and Sri Lanka – is poor to fair (level 3 in the WHO rating system). The official suicide rate for China comes from the National Surveillance of Disease System which includes 145 surveillance sites across the entire country. These surveillance sites are sample based using cluster random sampling. The population in surveillance sites represents about 10% of the overall population in China or more than 100 million individuals (Phillips, 2002). The statistics from these sample sites are used to calculate the suicide rates for the country overall (Centre for Chronic Disease Control, China CDC, 1999). Death registration is one of the major components in this system. The surveillance system projected the death rate due to suicide as 13.9/100,000 for the year 1999; a higher suicide rate was projected for the rural areas (16.8/100,000) than the urban areas (4.0/100,000).

The Chinese suicide rates are considered underestimates based on the inability of the national surveillance system to track adequately suicides in rural China, where most of the population lives, and where studies confirm that the suicide death rate is three to four times higher than in the urban areas. In urban China, the death certificate is typically signed by a medical practitioner who has seen the body and talked to the family; the police are involved only in the small percentage of cases where a homicide is suspected. In rural China the ‘village doctors’ – typically health workers with little or no formal medical training – sign most of the death certificates of those who do not die in hospitals (the majority of suicides). These village doctors may not interview the family to verify the cause of death and can simply accept the family’s report as to the cause. In addition, they may not have adequate knowledge to recognize suicide as a

cause of death. Efforts being undertaken in China to train doctors in the rural areas will be discussed in the final chapter.

Researchers recalculating the rates to correct for the population distribution have found rates for China ranging from 22 to 30 per 100,000 (Murray et al., 1996 a, 1996 b; Phillips et al., 2002; Yip et al., 2005). With 21 percent of the world's population, China has been estimated to account for 30% to 44% of global suicides (Murray et al., 1996 a, b; Beautrais, 2006).

India has a population size comparable to that of China, and also estimates suicide rates based on a sample of the population. In India, however, suicide is illegal so there is an even greater danger of under-reporting. Although the police investigate all suspected suicide cases, before a final verdict is passed the case is reviewed by 'panchayatdars', who are prominent citizens in the locality and neighbours of the deceased. Many deaths, particularly in the rural areas, are not registered at all partly because of an inefficient registration system (Bose et al., 2006) and partly because families fear the social and legal consequences associated with suicide. Only about 25 percent of deaths in India are registered and only about 10 percent are medically certified (Bhat, 1991; Ruzicka, 1998). The source of the data is the National Crime Records Bureau in the Ministry of Home Affairs. Large scale verbal autopsy studies of all deaths in rural regions reveal that the suicide rate in the rural areas is three to four times higher than that reported by the government, so the official suicide rate reported for the country is probably significantly lower than the actual rate (Joseph et al., 2003; Gajalakshmi et al., 2007).

In Thailand a new registration system introduced in 1996 helped ensure that deaths would be recorded but did not require that the cause of death be medically validated. Preliminary studies found that 'ill-defined causes' or non-specific cardio-vascular disease (i.e., 'the heart stopped beating') were the most frequently reported causes of death. (Choprapawon et al., 1996) so the Thai Ministry of Health appointed a special research team to verify the causes of death and recommend reforms to the death registration system. A retrospective population based study collected information provided by family-member informants, death certificates, and medical records (if available) on all deaths between 1997-1999 from 15 provinces reflecting the country's geographic variability. Qualified physicians reclassified the cause of death based on ICD-10 criteria (Choprapawon et al., 2005). In nearly half of the cases, the original cause of death recorded had been supplied by relatives; medical doctors had

determined the cause of death in only 28% of cases. The overall agreement between cause of death in the survey and on the death certificates was 29.3%. On ill defined causes of death the level of agreement was 33%. For suicide it was only 4%. Based on these troubling findings the expert group recommended medical certification of all deaths. In 2001, the Thailand government implemented a new, more rigorous reporting system in 18 pilot provinces. Subsequent evaluation indicated that the new system was successful so it was implemented nationwide in 2003 and is currently being adjusted by incoming data. It is projected that the validity of mortality data should improve from 70 to 80 percent within five years. If it does, the most striking improvement is likely to be in the accuracy of the suicide rates.

Although Sri Lanka has a high reported suicide rate, there is still substantial under-reporting. Civil war resulting in large numbers of refugees is believed to contribute to the suicide rate (Berger, 1988), but has also made it impossible to collect suicide data from the north-eastern region of Sri Lanka, which is known to have the highest suicide rate in the country. Moreover, a large number of deaths from pesticides – the most common method of suicide in the country – are misclassified as accidental or as deaths of undetermined cause (Asian Legal Resource Center, 2003).

At the other end of the spectrum are Pakistan and Viet Nam in which the evidence used to report mortality is rated poor (level–4 in the WHO rating system). In Pakistan national suicide data are not reported but there are published estimates based on police and hospital data; these estimates are considered underestimates by experts who have analysed them (Ghaffar et al., 2001; Hang et al. 2003; Khan and Hyder 2006, Khan et al., 2007). In Viet Nam the fact of death, but not the cause of death, is reported to a local health official (Huang, 2007). Hospitals keep records of the causes of death in their facility and report them to the Ministry of Health. The figures are available to researchers but since they are partial figures no official report is released.

Underreporting and misclassification of suicide is not, of course, unique to Asian countries. Underreporting takes place in every country regardless of the system used to determine causes of deaths. Misclassification, both deliberate and non-deliberate, occurs in all countries that have examined the problem. A recent study in France, using established criteria for classifying a death as suicide, reclassified 35% of the undetermined deaths, and 25% of the deaths from unknown causes as suicides, resulting in an increase of over 20% in the suicide rate of virtually all age groups, though the 10% drop in suicide mortality in the country from 1980 to 1988, remained.

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After correcting suicide rates in 17 European countries using the same method for reclassifying deaths due to undetermined or unknown causes, the rank order of the suicide rates in the countries were largely unchanged; only the rank order of Denmark and Portugal changed (Andriessen, 2006). The Danish rate went from 19.8 to 31.9 per 100,000 and the Portuguese rate increased even more substantially from 6.6. to 25.3 per 100,000. Recognizing limitations of the study, the authors conclude the total epidemiological picture seems reliable and international suicide rates can be compared over time: 'Suicide rates can have a weak validity but an acceptable reliability' (Jouglan et al., p. 60, 2002).

Of course rates of undetermined causes of death will vary from country to country and the variation is likely to be greater among some of the Asian countries, like the Republic of Korea and Thailand, based on improvements in the method of reporting. It is encouraging that there are dedicated researchers in each of the countries participating in the STOPS project who are determined to correct the problem and an increasing willingness on the part of some of their governments to consider suicide a public health problem that needs to be addressed rather than a political liability that needs to be hidden. For example, Viet Nam, a country with no system in place for recording causes of death, seems among those most committed to change.

Age, sex, and location of residence

Table 1 also provides information on suicide rates by sex, age group, and location of residence in the participating countries. In Australia and New Zealand, the male:female ratio is typical of that in most European countries and the United States of America, at about 4:1. However, in most other Asian countries where data are available, the ratio is much lower, and in China the female rate is higher than the male rate. In Australia, Pakistan, Sri Lanka, and Thailand young people have the highest rates; in China, Hong Kong SAR; Japan; Malaysia; the Republic of Korea and Singapore suicide is a relatively greater problem for older people; in China and New Zealand there are high rates in both the young and the old; and in India middle-aged individuals have the highest rates. For some countries, the age-specific suicide rates have shifted substantially over time. Rural rates of suicide are higher than urban rates in Australia, China, India, the Republic of Korea and Sri Lanka, but in New Zealand urban rates are higher than rural rates.

The social and cultural factors contributing to differences in the demographic profile of suicide among Asian countries, European countries, and the United States of America will be discussed in Chapter 2.

Methods of suicide

Table 1 also indicates the most common methods of suicide in the participating countries. In Australia, Japan, New Zealand, Pakistan, and Thailand, hanging dominates as the most common method of suicide. In China, Hong Kong SAR, and Singapore, jumping (typically from apartment buildings) is the most frequent method used (Ung, 2003; Yip, 1996). In countries with larger rural populations, such as China, India and the Republic of Korea, poisoning (usually by pesticides) is common (Bose et al., 2006; Shin et al., 2004). Some new methods are also emerging, such as carbon monoxide poisoning by intentionally burning charcoal in a confined space. In China, Hong Kong SAR charcoal-burning accounted for a single suicide in 1997 but it is currently among the top three most common methods of suicide (Chan et al., 2005; Chung et al., 2001; Yip et al., 2007).

The importance of restricting the availability of commonly employed means as part of the overall suicide prevention effort will be discussed in Chapter 7.

Summary and conclusions

Efforts to address suicide in Asian countries have, to date, been relatively unsystematic. The STOPS project aims to strengthen suicide prevention efforts in participating Asian countries by focusing attention on particular strategies. Describing the epidemiology of suicide in these countries and understanding the weakness of the current mortality monitoring systems in the target countries is an important first step, since it provides a baseline against which suicide prevention efforts can be implemented and evaluated. Despite the weakness of some of the epidemiological data, it is clear that the epidemiological picture differs from country to country, and this has implications for the kind of suicide prevention activities which might be most useful. The next chapter in this report deals with socio-economic, cultural and religious factors affecting suicide and suicide prevention in Asia, and provides a perspective that may help to understand some of the epidemiological differences observed in the current chapter.

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EPIDEMIOLOGY OF SUICIDE IN ASIA

Table 1: Epidemiology of suicide in participating countries

Country	Population	Total rate (per 100,000)	Male rate (per 100,000)	Female rate (per 100,000)	Male: Female rate ratio	Age group(s) for whom rates highest	Area for which rates highest	Most common method(s)
AUSTRALIA	20.2 million	10.4 ^b	16.8 ^b	4.3 ^b	3.9:1.0 ^b	Young adults ^b	Rural ^b	<ul style="list-style-type: none"> • Hanging (48%)^b • Poisoning (30%)^b
CHINA	1.3 billion ^a	20.8 ^c ;23.2 ^d	20.7 ^d	25.9 ^d	0.8:1.0 ^d	Young adults ^d Older adults ^d	Rural ^d	<ul style="list-style-type: none"> • Poisoning (by pesticides) (62%)^e
CHINA, HONG KONG SAR	7.0 million ^a	15.3 ^f	20.1 ^f	10.9 ^f	1.8:1.0 ^f	Older adults ^f	Urban ^f	<ul style="list-style-type: none"> • Jumping (49%)^f • Poisoning (25%)^f
INDIA	1.1 billion ^a	17.38 ^c	18.0 ^c	15.0 ^c	1.2:1.0 ^c	Adults (30-59yrs) ^g	Rural ^h	<ul style="list-style-type: none"> • Poisoning (38%)^g • Hanging (29%)^g
JAPAN	128.0 million ^a	23.8 ⁱ	35.2 ⁱ	12.8 ⁱ	2.8:1.00 ⁱ	Adults (50-65+) ⁱ	Not available	<ul style="list-style-type: none"> • Hanging (60%)ⁱ
MALAYSIA	25.3 million ^a	13.1 ^j	Not Available	Not Available	Not Available	Young adults (20-30) ^j	Rural	Pesticides (% Not Available)
NEW ZEALAND	4.0 million ^a	12.8 ^k	20.3 ^k	5.8 ^k	3.5:1.0 ^k	Older adults (85+yrs) ^k Adults (20-29yrs) ^k	Urban ^k	<ul style="list-style-type: none"> • Hanging (48%)^k
PAKISTAN	157.9 million ^a	0.43;2.86 ^l	.61-5.2 ^l	0.23—1.77 ^l	2.2:1.0 ^l	Young adults ^l	Urban ^l	<ul style="list-style-type: none"> • Hanging (37%)^l • Poisoning (29%)^l
REPUBLIC OF KOREA (THE)	47.8 million ^a	26.1 ^m	34.9 ^m	17.3 ^m	2.0:1.0 ^m	Older adults ^m	Rural ^m	<ul style="list-style-type: none"> • Poisoning (45%)^m • Hanging (26%)^m
SINGAPORE	4.3 million ^a	9.9 ⁿ	11.9 ⁿ	8.0 ⁿ	1.5:1.0 ⁿ	Older adults ⁿ	Urban ⁿ	<ul style="list-style-type: none"> • Jumping (70%)ⁿ
SRI LANKA	20.7 million ^a	23.9 ^o	18.8 ^o	5.1 ^o	3.7:1.0 ^o	Young adults (25-44) ^p Older adults (60+) ^p	Rural ^o	<ul style="list-style-type: none"> • Poisoning (by pesticides) 40-80%^o
THAILAND	64.2 million ^a	(7.3) ^q	11.0 ^q	3.3 ^q	3.3:1.0 ^q	Young adults (25-29) ^q	Not available	<ul style="list-style-type: none"> • Hanging (55%)^q
VIET NAM	84.2 million ^a	NA	NA	NA	Not available	Not available	Not available	Not available

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