

## ORIGINAL ARTICLE

### Pattern of homicidal deaths autopsied at Penang Hospital, Malaysia, 2007-2009: a preliminary study

Bhupinder S *DMJ(Path)*, Kumara TK *BSc*, and Syed AM *AMO*

*Department of Forensic Medicine, Penang Hospital, Penang, Malaysia.*

#### Abstract

This article describes the homicide pattern in Penang Island, Malaysia over a three-year period (2007-2009). 65 homicide autopsies were performed at the Department of Forensic Medicine, Penang Hospital over the study period. The homicide rates ranged from 0.01 to 0.09/1000 population, the highest being in the Indian ethnic group. The majority (37%) of victims were in the 20-39 years age group. The male: female ratio was 3:1. The majority of deaths were caused by blunt instruments (46%), followed by stab/slash wounds (25%) and asphyxiation (12%). 63% of homicides occurred in areas served by the police stations at Jalan Patani (23.1%), Sg. Nibong (16.9%), Central (12.3%) and Bayan Lepas (10.9%). 56 (86%) victims were brought in dead to the hospital, while 9 (14%) died after admission. Most (39%) incidences occurred in the morning. The methods of homicide were different from Kuala Lumpur, another highly urbanised area of Malaysia.

*Keywords: Forensic medicine, homicide, epidemiology, Penang, Malaysia*

#### INTRODUCTION

Homicide is defined as the killing of one human being by the act, procurement, or omission of another and the term applies to all such killings, whether criminal or not.<sup>1</sup> The homicide statistics of killing varies from country to country and region to region.<sup>2, 3</sup> The pattern of homicide may be a useful indicator of the social stresses in a community and may also provide useful information for law-enforcement strategies. Malaysia is a unique multiethnic and multicultural country with considerable social diversity between rural and urban populations. As Penang Island is one of the oldest urbanized areas of Malaysia, a study of its homicide pattern can provide valuable baseline information for other comparative studies as well as for monitoring of sociopathological trends in Malaysian communities.

#### MATERIALS AND METHODS

The Department of Forensic Medicine, Penang Hospital provides the autopsy service for the whole island of Penang. In 2007, the Department successfully implemented the "Death Registry System" database to record all deaths occurring

in or brought into the hospital. The registered data of homicidal deaths captured from 2007 to 2009 was analysed using JMP 8 (SAS Institute Inc., Cary, USA) according to the gender, ethnic group, age and nationality of homicide victims, method of homicide, day and time of the incident and the location of the homicide. The homicidal rate was calculated based on the population of Penang Island over the study period.

The sources of information entered into the "Death Registry System" were as follows:

- (1) The cause of death was based on autopsy findings.
- (2) The age, ethnic group and nationality of victims were based on available official documents (e.g. identity card or passport).
- (3) The date and time of the homicide was based on date and time that the police were notified of the incident.
- (4) The location of the homicide was assigned to the police station handling the investigation of the homicide. This was normally the police station serving the area where the incident occurred.

## RESULTS

Sixty-five homicidal deaths were autopsied at the Department of Forensic Medicine, Penang Hospital during the 3-year period, 2007 to 2009. The homicide rate (number of homicide victims per 1000 population) according to ethnicity is shown in Table 1. The rate was highest for the Indian ethnic group throughout the 3-year study period.

### *Demographic profile:*

The majority (37%) of victims were in the 20-39 years age group (Table 2). Males outnumbered females by a 3:1 ratio. The Chinese constituted 34% of homicide victims followed by Indians (23%) and Malays (17%) (Figure 1), which was different compared with the racial distribution in Penang Island (Table 1). 17 % of homicide victims were non-Malaysians (Figure 2) although they only constituted 7 to 8 % of the population in Penang Island.<sup>4, 5</sup>

### *Sociopathological profile:*

The majority of homicide deaths were caused by blunt instruments (46%), followed by stab/slash wounds (25%) and asphyxiation (12%) (Figure 3). When there is a homicidal death in an area, the death would be investigated by

the investigation officer from the nearest police station. Based on this understanding, the areas (Table 3) with the highest numbers of homicides were those served by the police stations at Jalan Patani (23.1%), Sg. Nibong (16.9%), Central (12.3%) and Bayan Lepas (10.9%). Together, these captured 63% of cases.

56 (86%) victims were brought in dead to the hospital, while 9 (14%) died after admission. Information on the time and days of the week for the incidences are as shown in Tables 4 and 5.

## DISCUSSION

Penang Island is an island with a population of 726,600<sup>5</sup> (in 2009). The common methods of homicide throughout the world are stabbing, mechanical asphyxia, blunt head injury and shooting.<sup>6</sup> The most popular method of homicide in this island was blunt trauma caused by instruments, contrary to findings in Kuala Lumpur<sup>7</sup> and Manipal<sup>8</sup> where stab/slash wounds were more commonly seen. Stab/incised wounds were the second most common method of homicide in Penang. A study in Stockholm, Sweden, found that there was a correlation between the number of stab or slash wounds and the relationship of the perpetrator towards the victim.<sup>9</sup> Others found that there was an

**TABLE 1: The population distribution, homicide deaths and rates, based on main ethnicity in Penang Island (2007-2009), Malaysia**

Characteristics	Years		
	2007	2008	2009
<b><i>Population ('000)*</i></b>			
Chinese	363.2	367.3	371.8
Indian	57.0	57.3	57.7
Malay	225.4	230.1	235.2
Non-Malaysian	46.9	50.5	54.0
<b><i>Homicide deaths</i></b>			
Chinese	9	3	10
Indian	5	5	5
Malay	6	2	3
Non-Malaysian	2	2	3
<b><i>Homicide rates/1,000</i></b>			
Chinese	0.02	0.01	0.03
Indian	0.09	0.09	0.09
Malay	0.03	0.01	0.01
Non-Malaysian	0.04	0.04	0.06

\*Source: Department of Statistics Malaysia, Penang. (Projections based on the 2000 Population Census).

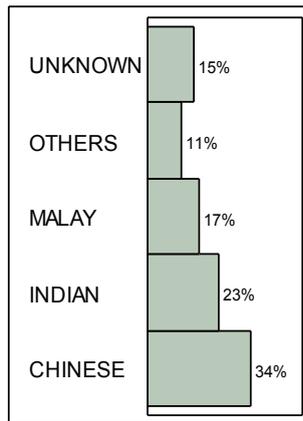


FIG. 1: Ethnic distribution of homicidal victims in Penang Island (2007-2009)

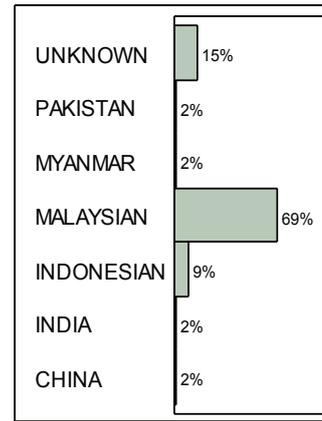


FIG. 2: Distribution of homicide victims in Penang Island by nationality (2007-2009).

association between the weapon used and the fatal injury inflicted on the body. When blunt objects were used, the head was the usual target and if a sharp object was used both head and abdominal regions were commonly involved.<sup>8</sup> Our current study did not explore these correlations though it will be interesting to investigate whether such correlations exist in Penang homicidal deaths in future studies.

In Penang Island, the majority (39%) of homicide deaths occurred during the morning hours and the percentage was relatively stable during afternoon, evening, and late night. This finding was similar to Sri Lanka, where 54% of

homicide deaths were reported to occur during the day time.<sup>2</sup> On the contrary, in Manipal, India the majority of homicides occurred during the evening and night hours.<sup>8</sup> When the homicide deaths were analysed according to the day of incident, homicide deaths were more prevalent on Thursdays though it can occur at any time of the day. This differed from the pattern in Manipal<sup>8</sup> and Auckland<sup>9</sup> where more homicides occurred over the weekends (Saturday and Sunday).

The incidence of homicide among males was higher in Penang Island. Similar patterns were also observed in other studies<sup>2,7,10,11</sup> Dikshit *et al.*<sup>12</sup> indicated that males by nature indulge in

TABLE 2: Distribution of homicide cases in Penang Island by age-group and gender (2007-2009)

Age group (years)	Gender		Total (%)
	Female	Male	
Below 9*	4	4	12.3
10-19	0	2	3.1
20-29	2	10	18.5
30-39	2	10	18.5
40-49	1	7	12.3
50-59	1	9	15.4
60-69	2	3	7.7
70 above	0	2	3.1
Unknown	2	4	9.2
Total	14	51	100

(\* 4 were newborn babies)

**TABLE 3: The number of homicidal deaths according to police stations on Penang Island during the period 2007-2009**

Police stations*	Number of deaths	(%)
Jln. Patani	15	23.1
Sg. Nibong	11	16.9
Central	8	12.3
Bayan Lepas	7	10.7
Jelutong	6	9.2
Bt.Maung	2	3.0
Kg. Baru	2	3.0
P. Tikus	2	3.0
Tg. Tokong	2	3.0
Tlk. Bahang	2	3.0
Balik Pulau	1	1.6
Bt.Feringghi	1	1.6
Dato Keramat	1	1.6
Headquarters	1	1.6
Lbh. Pantai	1	1.6
Queensbay	1	1.6
Sg. Pinang	1	1.6
Tlk. Kumbar	1	1.6
Total	65	100

(\*Data based on police stations handling the cases, normally representing the location where the homicidal deaths occurred)

more violent activities compared to females while Kumar *et al.*<sup>7</sup> reasoned that males were more at risk of homicidal deaths as they were generally working outdoors and were more exposed to stress, frustrations and violence. The majority of

victims in this study were between 20-39 years old (36.8%) similar to the study conducted in Kuala Lumpur<sup>7</sup> though people of all age groups were involved. Eight homicide deaths involved children below 9 years of age and four of these

**TABLE 4: Time of incidence of homicide deaths in Penang Island (2007-2009)**

Time of incident	*Number of deaths	%
Afternoon (12pm – 6pm)	11	19.6
Evening (6pm – 12am)	12	21.5
Late night (12am – 6am)	11	19.6
Morning (6am – 12pm)	22	39.3
Total	56	100

(\*Data excludes the 9 cases that died after admission to the hospital)

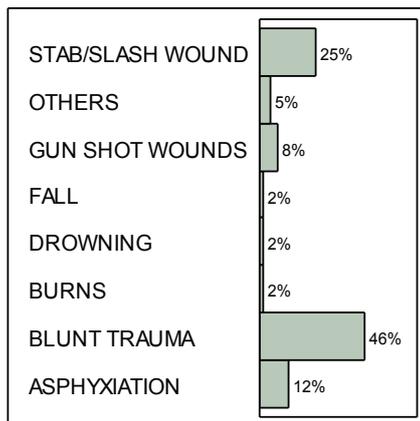


FIG. 3: Methods of homicide in Penang Island (2007-2009).

eight cases were newborn babies. Studies have revealed that the majority of child homicidal deaths occurred among children younger than the age of 5 years<sup>13,14</sup> and that 60% of parents who killed their children had been in contact with a physician, nurse, or social worker prior to the act.<sup>15</sup>

It is not surprising that the Chinese formed the majority (34%) of homicide victims as they are the majority ethnic group in Penang Island followed by Indians (23%) and Malays (17%). However, the homicide rates by ethnicity differed significantly from the ethnic distribution of the population in Penang Island (Table 1). Similarly, in Kuala Lumpur, homicide deaths were highest amongst the Indians, followed by Chinese and Malays,<sup>7</sup> differing significantly from the ethnic distribution in the Klang valley.

A study in Japan showed that rapid urbanization considerably affects regional differences in homicide patterns.<sup>16</sup> To fully understand the exact epidemiology of homicidal deaths in Malaysia, future studies among the main cities and states in Malaysia would provide a better understanding of this extreme form of violence. In this paper, the focus has been on the epidemiology of homicidal deaths. A study incorporating the living victims who are the immediate family members, relatives and friends<sup>17,18</sup> of the deceased would cast further light on the sociopathological impact of homicides on the community.

**ACKNOWLEDGEMENTS**

We thank Dr. Raja Lope Ahmad Bin Raja Ariffin, Director of Penang Hospital, and the Director-General of Health, Malaysia for permission to publish the data. The implementation of the “Death Registry System” won the Innovation Project of the year Award 2009 Penang Hospital (management category).

**REFERENCES**

1. Koehler SA, Brown PA. International Forensic Science and Investigations Series- Forensic Epidemiology. Boca Raton: CRC Press; 2010.187 p.
2. Edirisinghe PA, Kitulwatte ID. Extreme violence-homicide; an analysis of 265 cases from the offices of JMO Colombo and Ragama- A study from Sri Lanka. Leg Med (Tokyo). 2009; 11(Suppl 1): S363-5.
3. Nadanovsky P, Cunha-Cruz J. The relative contribution of income inequality and imprisonment to the variation in homicide rates among Developed (OECD), South and Central American countries. Soc Sci Med. 2009; 69: 1343-50.

**TABLE 5: Days of the week when homicide deaths occurred in Penang Island (2007-2009)**

Days	*Number of deaths	(%)
Sunday	6	10.7
Monday	8	14.3
Tuesday	9	16.1
Wednesday	7	12.5
Thursday	13	23.2
Friday	8	14.3
Saturday	5	8.9
Total	56	100

(\*Data excludes the 9 cases that died after admission to the hospital)

4. Basic population characteristics by administrative districts. Department of Statistics, Malaysia. 2008.
5. Basic population characteristics by administrative districts. Department of Statistics, Malaysia. 2009.
6. Scott KW. Homicide patterns in the West Midlands. *Med Sci Law* 1990; 30(3):234-8.
7. Kumar V, Li AK, Zainal AZ, Lee DA, Salleh SA. A study of homicidal death in medico-legal autopsies at UMMC, Kuala Lumpur. *J Clin Forensic Med*. 2005; 12: 254-7.
8. Mohanty MK, Kumar TS, Mohanram A, Palimar V. Victims of homicidal deaths-an analysis of variables. *J Clin Forensic Med*. 2005; 12:302-4.
9. Karlsson T. Sharp force homicides in the Stockholm area, 1983-1992. *Forensic Sci Int*. 1998; 94: 129-39.
10. Lo M, Vuletic JC, Koelmeyer TD. Homicide in Auckland, New Zealand. A 14 year study. *Am J Forensic Med Pathol*. 1992;13:44-9.
11. Henderson JP, Morgan SE, Patel F, Tiplady ME. Patterns of non-firearm homicide. *J Clin Forensic Med*. 2005;12:128-32.
12. Dikshit PC, Dogra TD, Chandra J. Comprehensive study of homicide in south Delhi, 1969-79. *Med Sci Law*. 1986; 26:230-4.
13. Lyman JM, McGwin G Jr, Malone DE, Taylor AJ, Brissie RM, Davis G, Rue LW 3rd. Epidemiology of child homicide in Jefferson County, Alabama. *Child Abuse Negl*. 2003; 27: 1063-73.
14. Vanamo T, Kauppi A, Karkola K, Merikanto J, Räsänen E. Intra-familial child homicide in Finland 1970-1994: incidence, causes of death and demographic characteristics. *Forensic Sci Int*. 2001; 117: 199-204.
15. Scott PD. Parents who kill their children. *Med Sci Law*. 1973; 13: 120-6.
16. Hata N, Kominato Y, Shimada I, et al. Regional differences in homicide patterns in five areas of Japan. *Leg Med (Tokyo)*. 2001; 3: 44-55.
17. Hertz MF, Prothrow-Stith D, Chery C. Homicide survivors research and practice implications. *Am J Prev Med*. 2005; 29 (5 Suppl 2): 288-95.
18. Zinzow HM, Rheingold AA, Hawkins AO, Saunders BE, Kilpatrick DG. Losing a loved one to homicide: prevalence and mental health correlates in a national sample of young adults. *J Trauma Stress*. 2009; 22(1): 20-7.