



Original communication

Fatal firearm injuries in autopsy cases at central Bangkok, Thailand: A 10-year retrospective study



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ABSTRACT

Even though there have been previously published reports on firearm injuries in various countries, the incidence and pattern of death from firearm injuries in Thailand have not been studied before. In present study, 149 fatal firearm injuries from 2002 to 2011 were reviewed. At total of 7126 autopsies, fatal firearm injuries comprised of 2.09% ($n = 149$) of total autopsies cases. Among those victims, 136 were male (91.3%), 13 (8.7%) were female. The youngest age of victim was 10 years and the oldest was 79 years. Mean age of the victims was 33.79 years and median age was 30 years. Outdoor incident was the most common scene of crime. Night time incident (18:00 PM–05:59 AM) was higher than day time one. Most of the cases occurred in week ends ($n = 52$). Homicide (77.2%) was the most frequent manner of death. Head/face and chest were the most common sites of entrance. The autopsy report also study on entrance wound, range and types of projectiles. Blood alcohol concentration was examined in 122 cases and 38 victims showed positive results, 11 cases revealed using of illegal substances in blood and urine analysis. This study also included the association between manner of death and other factors. Age group, time of incidence, place of incidence, number of entrance wound and range showed statistically significant association with manner of death.

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1. Introduction

A number of people all over the world die, unfortunately, every day due to injuries caused by firearm. Apparently, mass production of advance firearm and its availability in worldwide have an effect on increasing death and injuries caused by such weapon.¹ The magnitude of deaths due to guns varies greatly in different parts of the world, mainly because the weapons are easy accessibly in the context of social and cultural background and political conflicts. In developing countries, illegal firearms and locally made firearms or country guns are available without licensing. These guns are commonly used in criminal cases.²

According to UNODC 2004, the number of reported firearm homicides in Thailand has increased every year. A study regarding to various methods of homicide in Ramathibodi Hospital from January 2003 to December 2007 showed that homicide by firearm was the most common method in both male and female victims.³ According to Gunpolicy.org website, Thailand ranks the highest rate of civilian gun possession among regional countries.⁴ The estimated number of gun possessed by civilian both licit and illicit in Thailand was 10,000,000⁵. The estimated rate of civilian gun ownership in Thailand was 15.6 firearms per 100 people. Thailand ranks 11th private gun ownership comparing with 178 countries around the world.⁵

Even though there have been previously published reports on firearm injuries in various countries, the incidence and pattern of death from firearm injuries in Thailand (Specifically in Bangkok) have not been studied before. Identification of demographic, socio-economic, behavioral, and environmental risk factors will be considered in order to establish effective interventions for preventing any kind of injury and disease.⁶ Evaluation and analysis of those factors that are influencing the fatal firearm injury can assist the

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government, policy makers, law enforcement body and health care personnel to establish effective policies and strategies to prevent such morbidity and mortality.⁹ The objectives of this study were to find the incidence, pattern, autopsy findings and associated risk factors of fatal firearm injuries in Bangkok, Thailand. Simultaneously, to compare the results of the study with other studies in particular countries.

2. Materials and methods

Retrospective study design is applied in this study. Data were reviewed from autopsy reports of fatal firearm cases from January 2002 to December 2011. Those data was obtained through Autopsy Service, Department of Pathology, Faculty of Medicine Ramathibodi Hospital, Mahidol University. All cases were investigated by police and performed complete forensic autopsy by forensic doctor. All firearm death cases confirmed by police investigation and complete forensic autopsy were included in this study. Explosive deaths and death from riot control were excluded from this study. A pro-forma was created for recording data regarding to the demographic and the socio-economic, circumstance of incidence, the autopsy findings, the information of perpetrator and the toxicology results.

Data were analyzed by descriptive statistics and chi-square test using SPSS for Windows Version 18.0. A statistical significance will be considered at p -value <0.05 .

3. Results

The results were divided into five parts: the demographic factors, circumstance of incidence, autopsy findings and toxicology results, information of perpetrator, relationship between manner of death and other factors.

3.1. Demographic factors

During 10-year period from January 2002 to December 2011, total of 7126 cases of autopsies had performed at autopsy unit in Ramathibodi Hospital. Gunshot fatality comprised of 2.1% (149 cases) of total autopsy cases. Out of 149 fatal firearm cases, 136 (91.3%) victims were male and 13 (8.7%) victims were female. The male to female ratio was 10.5:1. Average cases per year was 13.6 ($n = 136$) for male and 1.3 ($n = 13$) for female (Fig. 1).

Mean age of the gunshot wound victims was 33.79 years old (SD = 14.08) and median age was 30 years. The youngest age of victim was 10 years and the oldest one was 79 years old. It can be categorized the continuous age into 7 groups. The most frequent age groups were the age group (21–30 years) and (31–40 years) comprising 38.3% and 19.5% respectively (Table 1).

The majority of fatal gunshot wound (GSW) cases were Thai nationality ($n = 140$, 94.0%). The rest 9 cases (6.0%) were other nationality, 8 Myanmar and 1 American (Table 1).

3.2. Circumstance of incidence

The study distributed cases according to seasons, day and time of incidence, place of incidence and police responsible area

Table 1
Distribution of fatal firearm injuries according to age groups and race.

Demographic factors	Total number of cases	Percent	
Age groups	≤20	20	13.4
	21–30	57	38.3
	31–40	29	19.5
	41–50	24	16.1
	51–60	8	5.4
	≥61	8	5.4
Nationality	Unknown	3	1.9
	Thai	140	94.0
	Non-Thai ^a	9	6.0

^a Myanmar and American.

(Table 2). The incidences occurred highest in rainy season. No significant association between manner of death and season in our study (summer and winter were combined to dry season) (Table 5).

As for day of incidence, most of the GSW cases occurred in weekend at 34.8% ($n = 52$), during the period of time at 0:00–6:00 AM and 18:00–23:59 PM. The incident of the GSW was higher at night time. Table 2 showed frequencies and percentages of fatal the GSW cases according to police responsible area. Phayathai police area was the highest rate ($n = 55$) of the fatal GSW.

As for place of incidence, more than half of the fatal GSW cases occurred outdoor and social activity places, 33.6% and 31.5% respectively. For suicide, private home was the most frequent scene of incidence. The least frequent place of incidence was in automobile of 6 cases (4.0%). There were 12 cases in our study that of the place of incidence could not be identified. In this study, scene of incidence is found to be associated with manner of death ($\chi^2 = 48.4562$, p -value = 0.000) (Table 5).

3.3. Autopsy findings

Majority of the fatal GSW cases were homicidal victims, included 106 male and 9 female. It was 77.2% of the total fatal GSW cases occurred during 10 years period. The second common manner of death was suicide (21.5%), consisting of 29 male and 3 female. There was only one accidental fatal GSW case that occurred when two children playing together with a gun. No either hunting accident or accident by oneself was found in the study. There was only one female victim of whom manner of death could not be exactly determined (Table 3).

The most common cause of death was brain injury at 45.0% ($n = 67$). Followed by hemorrhagic shock at 28.2% ($n = 42$). There were 31 cases (20.8%) died by other vital organ injury. There were 3 cases died due to spinal cord injury, 3 cases of pneumonia, and 1 case of multi-organ failure. Moreover, 1 case of septicemia was found as complications following gunshot injury. There was one case of neurogenic shock that the death one was hit at the buttock without injuring at any other internal organ and main vessels.

Single GSW was found in 28 suicidal cases (87.5%) and 43 non-suicidal cases (36.8%), totally 71 cases (47.7%). Majority of the multiple GSW cases were non-suicidal cases ($n = 74$). Four cases of multiple GSW were identified as suicide. There is significant

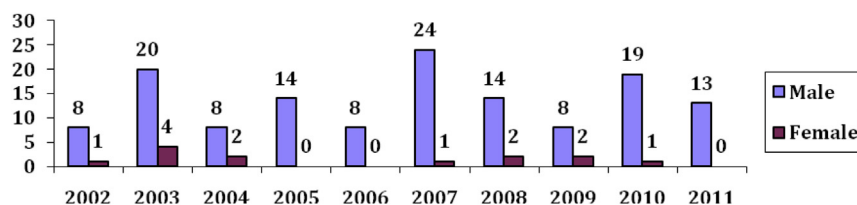


Fig. 1. Annual number of fatal firearm injury cases according to gender.

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