

Original Research Article

Interpretation Of Various Medico-Legal Aspects Of Gunshot Injuries: A Compilation Of Autopsy Findings Performed At Darbhanga Medical College & Hospital, Bihar**Prafulla Kumar Das¹, Dhirendra Kumar Chaudhary^{2*}, Kunal Babu³**¹Associate Professor, Department of Forensic Medicine and Toxicology, Darbhanga Medical College & Hospital, Bihar, India²3rd year Junior Resident, Department of Forensic Medicine and Toxicology, Darbhanga Medical College & Hospital, Bihar, India³2nd year Junior Resident, Department of Forensic Medicine and Toxicology, Darbhanga Medical College & Hospital, Bihar, India

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Abstract

India's rates of violence vary greatly from state to state, and city to city, ranging from relatively high to negligible. India officially reported total national firearm murder cases 2818 (9.8%) out of 34305 homicidal deaths. Percentage wise it is nearly equal for year 2012 (10.98%) and for 2013 (10.90%). Present study was done with objectives of studying the epidemiological patterns of firearms deaths and wound characteristics over the victim body. **Methodology:** This study includes all firearm fatality cases, presented to the mortuary of the Darbhanga Medical College & Hospital, Darbhanga, Bihar for autopsy, over the period of two year that was from July 2018 to May 2020. Ethical approval for this study was taken with due procedure from the college ethical committee. **Results:** Over the period of observation and data collection, total 39 deceased with suspected firearm deaths were brought for autopsy examination. On autopsy following findings were noted down. Out of 39 victims, majority were from 3rd decade of life and 38 were males. Only one female died because of firearm and she as in the 4th decade of her life. In 30 homicidal cases, probable motive behind the death was personal rivalry in 22 of the cases, 2 had political background and cause behind the rest 6 cases was unknown. **Conclusion:** Increase in suicidal pattern in police officials by using firearm weapon is major concern and proper psychological evaluation with mental support will definitely reduce this mortality.

Keywords: Gunshot Injuries, Autopsy Findings

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Introduction

India's rates of violence vary greatly from state to state, and city to city, ranging from relatively high to negligible. These rates are reflected in the nation's well-known diversity in languages, literacy, economic status, and cultural customs. As in most metro cities, including Mumbai the violent crimes - especially homicides - continue to be a cause for concern over various agencies. Assault, mechanical asphyxia, blunt head injury and shooting are the common methods of homicides. Firearm as mode of homicide is increasing throughout the world. In the United States, the risk of death from firearms injuries versus death by RTA is relatively high[1]. In 2012, India officially reported total national firearm murder cases 2818 (9.8%) out of 34305 homicidal deaths. Percentage wise it is nearly equal for year 2012 (10.98%) and for 2013 (10.90%)[2]. In the era of gang war and encounter in Mumbai there were significant contribution of firearm deaths in total homicides. But the decline in the rate of murder committed with firearms is especially striking compared to trends in other violent crimes, which declined only slightly over the period. Present study was done with objectives of

studying the epidemiological patterns of firearms deaths and wound characteristics over the victim body.

Methodology

This study includes all firearm fatality cases, presented to the mortuary of the Darbhanga Medical College & Hospital, Darbhanga, Bihar for autopsy, over the period of two year that was from July 2018 to May 2020. Ethical approval for this study was taken with due procedure from the college ethical committee. Our study attempted to define the age and gender pattern, manner and mode of death, extent and severity of firearm-related injuries in the victims.

All firearm death records were thoroughly reviewed for the following information:

1. Examination of various demographic factors observed in firearm fatality.
2. Examination of the characteristics of firearm injuries like range and number of entry/exit wound.
3. The probable type of weapon used and the cause of death.

Statistical analysis

The data collected from the autopsies were entered and analyzed using Statistical Package for Social Sciences (SPSS) ver. 20.0. Results has been shown in terms of numbers and percentage and depicted in form of tables and text.

Results

Over the period of observation and data collection, total 39 deceased with suspected firearm deaths were brought for autopsy examination. On autopsy following findings were noted down. Out of 39 victims, majority were from 3rd decade of life and 38 were males. Only one

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female died because of firearm and she as in the 4th decade of her life (Table 1).

Table 1: Distribution of victims on basis of age and gender (N = 39)

Gender	Age (in decade of life)						
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Male	0	0	17 (43.6%)	6 (15.4%)	4 (10.3%)	2 (5.1%)	0
Female	0	0	0	1 (100%)	0	0	0

After evaluation of police investigation papers and detail autopsy examination the homicide as the probable manner of death was confirmed in majority of cases 30 (76.9%). Rest were suicidal firearm injury and accidental firing(Fig 1).

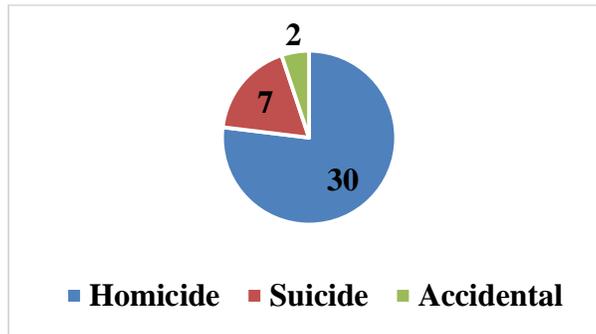


Fig 1: Pie diagram showing distribution of gunshot injury base on manner of death

In 30 homicidal cases, probable motive behind the death was personal rivalry in 22 of the cases, 2 had political background and cause behind the rest 6 cases was unknown (Fig 2).

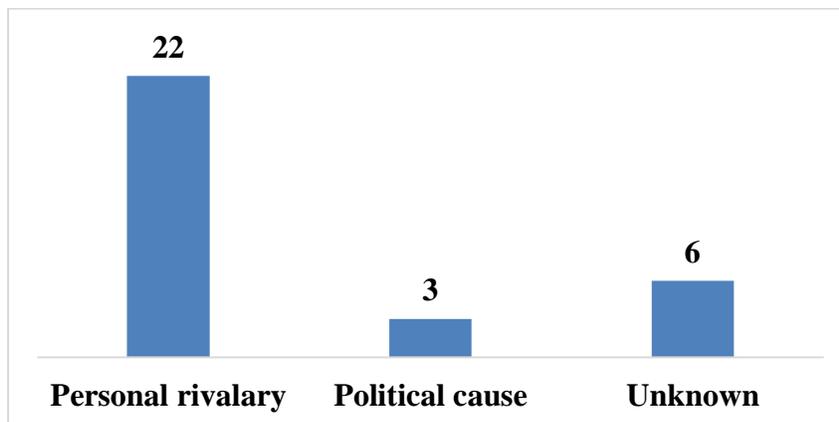


Fig 2: Bar diagram showing distribution of homicidal cases based on the cause

As per information gathered from deceased family members and investigating officers the profession of deceased was categorized against manner of death. Out of which 30 unfortunate victims of homicidal death, 13 unfortunate victims of homicidal death were laborer or hard workers. Another 13 deceased were either unemployed or of unknown profession. One policeman died in

homicidal firing incidence. Rest 3 victims were high qualified profession either businessman, builders or other. Seven police personnel had done the suicide by using service weapon, while 2 police personal died accidentally while handling firearm weapon. (Table 2).

Table 2: Distribution of profession of deceased against their manner of death

Profession	Manner of death		
	Homicide	Suicide	Accidental
Laborers or hard workers	13	0	0
Police personnel	1	7	1
Others (Businessman, builders etc)	3	0	0
Unknown	13	0	0

In majority cases 33 (84.6%) the death occurs because of hemorrhage. In 2 cases (5.1%) death occur after few days because of coma, while septicemia occurs in 4 cases (10.3%) in hospitalized victims.

On autopsy examinations of all victim’s total entry wounds found were 73 in numbers, 46 were exit wounds and 27 bullets or pellets were recovered from body of deceased. Considering the detail

evaluation of all these firearm entries, exit wounds and ballistic expert reports, the probable range of firearm was calculated. Out of 73 entries wound found over 39 victims’ body, 36 entry wounds were of close range. While the near range of firearm found in 16 entry wounds and distant in 11 cases. The 10 entry wounds were of body contact in nature. In all firearm deaths chest was the most common area of body involved and had 14 entry wounds. From chest 11

bullets or shots were retrieved on during autopsy. This was followed by head having 22 entry wound, 18 exit wound and 4 retrieved bullets or shots. Entry wound present over face were 7, over abdomen 4, over back 6, over upper limb 5 while over lower limb was 2 in numbers. Out of 39 fatalities, in 21 cases victims had only one firearm entry wound, i.e. victim was shot only once. While the fatality with two shots observed in 9 cases and with three entry wound in 4 cases. More than three or multiple shots seen in 5 cases.

Discussion

In this study, the male victims outnumbered females, and most of them were in age group 21- 30 years. The young males from this age group are socially most active group so are having high probability of interpersonal violence. This finding is consistent with most of the studies covering the firearm deaths [4-9]. Amongst all deceased 76.9% were victims of homicidal deaths and 17.9% choose firearm as a method for suicidal death. These findings were consistent with some studies [8,9]. But in contrast with some of the foreign studies where most of firearm deaths were suicidal in nature [9-12]. Probable reason behind this is use of other available methods to commit suicide. But on the other side the finding of increased percentage of suicidal firearm deaths in this study is not similar with other Indian studies [5,14,15]. This is because of geographic variation and more suicide in particular profession. The most common reason behind the homicidal firearm death or killing of person was the personal rivalry (51.2%). This finding is different from the findings of the other studies in this field, where the most common motive of the killings were due to property dispute or the politically motivated murders [6,13]. This variation is because of the increase in interpersonal violence as compared to the political violence or gang war in metro cities during the study period. During study it was found that maximum suicide by using firearm weapons were done by police persons. In similar studies done in Iran where all suicidal deaths were by military weapon [15]. In both studies easy access to firearm weapons and mental burden while delivering services is main reason behind these suicides. Maximum victims of homicidal firearm deaths were either unemployed or deceased with unknown profession. The probable reason behind this was no fixed money income source or having some criminal background. The death of one police professional was accidental because of carelessness while handling the firearm weapon. Close range shot were observed in maximum cases which is similar to other studies [5,13,15,16]. Similar to other studies chest is common site involved in firearm injuries [4-6,9,13] but in contrast to other studies [3,6,18]. Out of total deceased in 21 (53.8%) cases victim had only one firearm entry wound, i.e. victim was shot only once. While the fatality with two shots in 9 cases (23.1%), thrice in 4 case (10.3%) and more than three or multiple shots in 5 cases (12.8%). These findings are similar to study [19] and differ from studies [6,14]. Cause for this is easy availability of local made illegal firearms weapon which are commonly used in criminal cases in developing countries. These weapons are made up of cheap material and have characteristic injury pattern so detection of weapon by matching of cartridge with test is easy [20,21].

Conclusion

Present study covers wound characteristic and epidemiological pattern of firearm deaths from only one metro city of India. Increase in suicidal pattern in police officials by using firearm weapon is major concern and proper psychological evaluation with mental support will definitely reduce this mortality. More studies from different location is needed for evaluation of firearm deaths trends.

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