



Original Research Article

Medico-legal trends of firearm injuries

Sumanta Dutta¹, Anil Solanki^{1,*}, Naveen K¹¹Dept. of Forensic Medicine & Toxicology, SMS Medical College, Jaipur, Rajasthan, India

ARTICLE INFO

Article history:

Received 20-03-2020

Accepted 21-03-2020

Available online 29-10-2020

Keywords:

Firearm injury

Homicide

Suicide

Jaipur

ABSTRACT

Introduction: In India, firearm injury is a global issue and causes significant hazards. Firearms and their use are modifiable risk factors which could help reduce the burden of violent death if recognized and addressed.

Materials and Methods: Hospital-based Descriptive Retrospective Research was conducted at the Department of Forensic Medicine S.M.S. Medical College, Jaipur during the period from May 2014 to October 2015.

Results: Firearm crime has a burden of 0.49 per cent (115 cases). Males (9:1) outnumber females. Majority of victims were in the age group of the second and third decades. Incidence in female, literate, and rural communities is higher. The most common manner of death was homicides.

Discussion: Property disputes, revenge, and robbery are common factors that underlie these. It takes educational efforts, individual and community approaches to mitigate firearm injuries. The epidemiological reviews contained in this research will enhance our understanding of different forms of firearm injuries, inform interventions and assist in charting directions for future research.

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1. Introduction

A firearm may generally be described as an assembly of a barrel and action from which a projectile is propelled by a propellant's (gunpowder) deflagration (rapid burning).¹ As firearm injuries are significant in several areas of the India, skill in interpreting these injuries is vitally important for forensic pathology practitioners. Combined with its significant effect on health and safety, the magnitude and prevalence of firearm violence makes it an essential public health concern. In a developing country like India, where poverty and violence are common, it is a major problem and causes considerable hazards. The World Health Organization (W.H.O.) study on violence calls on member nations to follow objectively and comprehensively approaches to tackle this public health issue.²

The approximate total number of weapons owned by people in India (both licit and illicit) is 40 millions.³ This probably explains that gunshot injuries in civilian environment in recent years have increased considerably in various parts of India with wide regional variations. Such injuries have a serious psychological and social impact on the family and community. Medical, legal and emotional costs of such violence impose an enormous burden on urban and rural hospitals, court of law, families, and the society as a whole. Firearms and their use are modifiable risk factors which could help reduce the burden of violent Death if recognized and addressed.⁴ Many researchers in different parts of the world have studied the various aspects of the firearm injuries. The frequency of Gun violence in India is raising day by day, but there is scarce data available. Our study is aimed at evaluating the sociodemographic parameters of cases of firearm injuries in Jaipur region.

Violence by firearms is preventable. The first step in preventing it is to understand the nature and extent of the issue — what it is, who it affects, where it happens,

* Corresponding author.

E-mail addresses: anilsolanki6252@gmail.com (A. Solanki), [Simatwal \(N. K.\)](mailto:Simatwal(N.K.)).

how patterns have changed over time, and the factors that contribute to these changes.

In this specific topic an overview of the factors leading to firearm abuse and improvements over time is discussed elsewhere. Here we provide an overview of fatal and non-fatal firearm violence in Jaipur region examining patterns of interpersonal, self-directed and unintended firearm injuries and deaths, including victimization demographics, trends over time, and health impact.

2. Material and Method

Descriptive Observational Study at the Department of Forensic Medicine and Toxicology, S.M.S. Medical College, and attached hospitals, Jaipur, conducted during May 2014 to October 2015. All fatal and nonfatal cases of firearm injuries reported at the study scene. Inclusion criteria include cases of firearm injuries admitted in the hospital for treatment purposes and cases undergone in the mortuary for autopsy.

The exclusion criteria were cases of air gun injuries, cases of explosion injuries and cases which did not provide informed written consent for the study. Inclusion criteria include firearm injuries cases admitted for treatment purpose in the hospital and cases undergone for autopsy at the departmental mortuary.

Air gun injuries cases, explosion injuries cases and cases that did not provide informed written consent for the study were the exclusion criteria. A pre-validated questionnaire was developed to record socio-demographic data pertaining to firearm injury cases. The researcher contacted the subject and told of the study's intent. In the case of subjects recruited from the mortuary, a legally valid well informed written consent was obtained from patients themselves or from nearest relatives. The questionnaire included information about age, gender, marital status, residence, occupation, education, outcome (survival or death) and motive for occurrence. Data were entered in MS excel sheet and statistical descriptive analysis was carried out.

Ethical clearance for the study was obtained from the S.M.S. Medical College Institute Ethics Committee, and the annexed Hospitals Group, Jaipur.

3. Results

The Department of Forensic Medicine, S.M.S. Medical College, and attached Hospital, Jaipur, reported a total of 23,584 medicolegal cases during the study period. Among them, 115 firearm injuries were found to have a burden of 0.49 percent. Approximately 67 percent of cases were from 20-39 years of age with peak incidence in the twenties age group (38 percent) and mean age came to 31.45 years. Male victims (about 90 per cent of cases) were predominant over females.

Married population share 80 per cent of the gunviolent research population affected. Rural regions account for 89 per cent of cases. Most of the victims (79 per cent) were literate and the rest were analphabets. Agriculture was the most common occupation of gun-shot injury victims followed by the self-employed. Most of the incidences of gun-shot injuries were inherently homicidal (78 percent) followed by accidental (16.5 percent). Surprisingly, only 2 suicidal gun-shot injuries were reported. Property disputes were the most common reason for firearm injuries and then revenge.

4. Discussion

Present study was conducted at the Jaipur-based tertiary health care centre providing health care to a large number of referral populations from the various districts of Rajasthan as well as other neighboring states of Haryana, Uttar Pradesh, Madhya Pradesh and Bihar. During the study period the Department of Forensic Medicine received 23,584 medico-legal cases. Of these 115 cases, there were 0.49 percent gunshot injuries. A total of 5,135 autopsies were performed, including 11 fatal firearm injuries (0.22 per cent) among them. Compared with other previous studies of Patowary A,⁵ Kumar P et al,⁶ Mehmat T et al,⁷ Capt Mirza F et al,⁸ Kumari S⁹ is very less; but similar to other researchers viz Amiri A et al,¹⁰ Sachan R et al,¹¹ Shashikant VK et al,¹² Chaurasia N,¹³ Davies MJ et al,¹⁴ Rao D).¹⁵ The reason for this great variation owes to the geographic variations in the various study sites.

The maximum number of cases in the present study was from 20-39 years of age (66.96 percent) with peak incidence in the twenties age group (38.26 percent), which are the reproductive and active members of the society. These observations were similar to those of Patowary A,⁵ Kumar P et al,⁶ Sachan R et al,¹¹ Shashikant VK et al.,¹² Chaurasia N¹³ (peak incidence between 21-40 years of age in all).

However, Kumari S's⁹ results are variable from those of the present study. As with most other studies from the same state, the probable reason for this variation is the minor cultural and periodic differences. Males (89.57%) outnumbered females (10.43%) with males: female ratio of about 8.9:1. Patowary A⁵ (88.9% males) and Kumari S⁹ (90% males) reported similar results. Males are the society's active participants, and are more commonly involved in outdoor activities. In addition, they are more prone to rage and revenge episodes. That explains the preponderance of males in all studies.

In the present research, about 80 per cent of victims of both sexes were married. It bears no correlation with such incidences but any type of outrageous behavior is more common after marriage because of the burden of responsibilities that come with it. The victims of firearm injuries showed a rural preponderance (88.70 percent)

while the urban population accounts for 11.30 percent of the victims. In both studies, Chaurasia N¹³ also showed predominance of rural victims with slight variations in proportions of the two (72.9 & rural & 27.1 per cent urban victims). Shashikant VK et al¹² also registered rural preponderance (46.3 per cent). This is probably due to the easier availability of illegal firearms in rural areas due to easier breaches of law. Strict laws in rural areas are hard to enforce for many reasons, such as broad regions, lower literacy rates, cultural pressures, socio-political constraints etc. There are also more disputes in the villages over land and properties, honor and reputation problems, caste conflicts, social stringency, etc. compared to modern cities, resulting in more frequent uproar and quarrels.

Our study population is of high literacy level. Educated citizens are supposed to use these lethal weapons judiciously. The literacy rates, however, are not an indication of educational quality. In most studies the education status was not defined as a variable.

Among the victims' occupational status, it was observed that farming was the most common occupation among victims (31.30 percent), which is quite evident in this study due to the preponderance of the rural population. The higher numbers of people from the agricultural field are also attributable to the fact that land is a major cause of disputes which lead to these heinous crimes either in impulse or with preparation. Our findings also correspond to those of Shashikant VK et al.¹²

In the present study, suicides (78.26 percent) were the most common type of firearm injuries followed by accidental and suicidal rates. Other research on Kumari S⁹ (88.34 percent), Sachan R et al¹¹ (92 percent) and Chaurasia N¹³ (85.4 percent) concluded similar observations. Patowary A⁵ and Kumar P et al⁶ studies have limited the study of mere homicidal patterns or suicidal firearm injuries (Rao D¹⁵). It is explainable the preponderance of homicide in gun-shot injuries because these lethal weapons are typically used in intended assault or impulsive manner.

Land and property disputes in this study were the most common reason for firearm injuries (42.61 percent) followed by revenge & robbery (13.91 percent and 12.17 percent respectively). Most cases had been due to militant activities, encounters, riots, robberies or family quarrels, according to Patowary A⁵ and Kumar P et al.¹⁶ This variability from our study is due to the regional differences in the research areas, as Guwahati and Imphal are areas prone to militant violence. The results of this study are fairly similar to those of Sachan R et al¹¹ who reported gun-shot injuries of 29.51 percent due to property disputes; 21.1 percent for dacoity; in slight variation to those of Chaurasia N¹³ where maximum homicides for personal enmity occurred (53 per cent).

5. Source of Funding

None.

6. Conflict of Interest

None.

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Author biography

Sumanta Dutta Associate Professor

Anil Solanki Assistant Professor

Naveen K Senior Demonstrator

Cite this article: Dutta S, Solanki A, K N. Medico-legal trends of firearm injuries. *Indian J Forensic Community Med* 2020;7(3):117-119.