

EPIDEMIOLOGY OF GUN SHOT INJURIES IN DISTRICT SIALKOT

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ABSTRACT

Background: Gunshot injuries (GSI) is a public health problem in developing countries, our studies attempted to define the circumstances, risk factors, extent and severity of firearm related injuries. **Objective:** The objective of this study was to determine the epidemiology of gunshot injuries, related to its circumstances, risk group, extent of injury and its severity in Sialkot District. **Materials & Methods:** Study Design: Retrospective study. Place and Duration: This study was conducted at Allama Iqbal Memorial Teaching Hospital, from 1st January 2008 to 31st December, 2012. The data was extracted, including patient demographic data, manner of injury, date, time, season of injury, type of weapon used, location where victim was attacked, and site of Injury. The data was entered and analyzed in SPSS version 15. **Results:** Total number of patients were 1240, male and female ratio was 6.2:1 and the most frequent age group was 3rd decade of life, it was more frequent in rural as compare to urban areas, majority of the incidences occurred in summer, most involved region was lower limb. **Conclusion:** Research on GSI provides new results and information which can be used to assist medical resource allocations and preventive campaigns. There is need for educational efforts and community, societal curriculum to reduce the GSI which is not possible without addressing root causes and bringing such changes which may minimize mortality, disability, and cost to community.

Keywords: Gun Shot Injuries, Sialkot, Rural, Homicidal, Suicidal

INTRODUCTION

Gun Shot Injuries (GSI) are on the increase globally, and have wide regional variations.^{1,2} They are the known cause of high morbidity and mortality and have become the leading external cause of non-natural deaths, within last two decades the incidence of civilian gunshot injuries and their ensuing fatalities have been on increase world wide.³ Considerable difference exist between world regions and individual countries and the incidence is higher in low income countries.⁴

In certain countries GSI have reached epidemic proportions so as in Colombia, Brazil and United State of America, where it is expected that by year 2003 the number of death from firearm injuries will surpass the number of death caused by roadside accidents to become leading cause of injury related deaths.⁵ The GSI are associated with substantial emotional, physical and financial burden on enormous human tool and imposing huge cost on the society despite outcomes that could be lethal.⁶ The injuries are increasingly seen in many developing countries which has been attributed to spates of communal ethnic clashes, political violence and arm robberies hunting,

student activities and rarely sporting and suicidal attempts weddings, holiday and festivals.⁷⁻¹²

GSI were first reported in west Africa following Nigerian civil war of 1967-1970, recently the incidence has been on increase world wide.^{13,14} There is growing concern about indiscriminate use of fire arms on large scale and use of small arm and light weapon (SALW), has been described as a cancer spreading across the developing world.^{15,16} GSI are the main cause of death in committing murder in a study carried out in Pakistan.¹⁷

The increase in crimes is being blamed as poverty, dwindling economic fortunes of the majority and lack of good governance in most developing countries.^{18,19,20} The locally made illegal firearms are commonly used in criminal cases in developing countries.²¹ The weapons are cheap not of fixed standard, unreliable cartridges made up of cheap material readily available for criminals. Most advance firearms are available at the global level hence death rates due to firearm injuries have increased dramatically.²² More than 25,000 people die in every year in USA by injuries caused by firearm, with a male predominance to female.²³ Pakistan is not far behind from the developed countries due to its tribal culture and border attachment with Afghanistan, almost all kinds of weapon are manufactured in tribal areas.

The incidence and the pattern of GSI have not previously been studied in our area so this study was conducted to find out the cases of GSI in our environment in order to elaborate the epidemiology like circumstances, risk group, extent, severity of injury and to suggest proactive measures.

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MATERIALS & METHODS

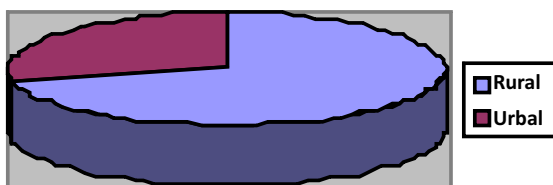
A retrospective study was conducted making use of the medico-legal registers of the trauma units in the period from 1st January, 2008 to 31st December, 2012, including both urban and rural areas of District Sialkot and this was supplemented with the data from the admission registers. All admission were reviewed and those with GSI were analyzed. All GSI records were thoroughly reviewed for the following information.

Demographic data of the injured including age, sex, occupation, residence. Manner of injury: homicide, suicide, accident and undetermined. Date of injury: Time, Season. Type of weapon used and characteristics of GSI. The data was entered and analyzed in SPSS version 15.

RESULTS

This study included 1240 injured from the whole of the district. Majority of the cases were found in 2009, 272 cases (21.9%) followed by 2008, 262 cases (21.2%) then 2012, 244 cases (19.6%), 2011, 234 cases (18.8%) & 2010, 228 cases (18.4%). The most commonly affected age group was third decade of life, 498 cases (40.1%) followed by those in the fourth decade 272 cases (21.9%) then second decade was the next more affected group 222 case (17.9%) followed by fifth decade 180 cases (14.5%), first decade 40 cases (3.2%) and sixth decade and above was the least affected age group 28 cases (2.2%). The male to female ratio was 6.2:1. There were 890 cases out of 1240 of GSI that occurred in rural areas while 350 cases occurred in the urban areas. (Figure I)

Figure I: Residence wise distribution of study subjects



In summer season 686 cases (55.3%), spring 322 cases (26.0%), winter 176 cases (14.1%), autumn 56 cases (4.5%), were reported and most of the incidence happened in the night 576 cases (46.4%), followed in evening 364 cases (29.3%), afternoon 180 cases (14.5%) and lastly in morning 120 cases (9.6%).

The relationship of the injured with the accused were; no relations 412 cases (33.2%), neighbourer 246 cases (19.8%), relatives 232 cases (18.7%), friends 188 cases (15.1%), self harmed 86 cases (6.9%) and by policeman 76 cases (6.1%).

The occupations of the injured were also recorded; traders 248 cases (20%), students 210 cases (16.9%), laborers 150 cases (12%), farmers 90 cases (7.2%), housewife 120 cases (9.61%), illegal workers 160 cases (12.9%), policeman 80 cases (6.4%) and lastly where occupation was not available 182 cases (14.6%). The cause of GSI were summarized as civil conflict 648 cases (52.2%), armed robbery 240 cases (19.3%), accidental discharged 120 cases (9.6%), self harm 86 cases (6.1%), policeman 76 cases (6.1%) and lastly shot by unknown persons 70 cases (5.6%).

Most commonly used weapon were locally made hand guns (30 & 32 bores) found in 880 cases (70.9%) while other 248 cases (20 %) were injured by automatic guns and in rest of the 112 cases (9.6%) kind of weapon was undetermined. 482 cases (38.9%) had multiple GSI while 758 (61.1%) got injuries as a result of single bullet injury.

The most frequently involved body region was lower limb 590 cases, followed by upper limb 220 cases, abdomen 160 cases, chest 144 cases, face 36 cases, head 26 cases, neck 24 cases and the least affected body region was perineum 3 cases.

DISCUSSION

The Gun Shot Injuries becoming a major health problem and despite the magnitude of the problem, little is known about the epidemiological characteristics of these injuries.²² There may be an underestimate and magnitude of the problem may not be apparent because many cases are not reported to police for the fear of arrest and other reasons.²⁴ The current study is retrospective analysis of the GSI in district Sialkot during the period between 1st January 2008 to 31st December, 2012. The study included 1240 injured in five year period and found that the most affected group was the age group of third decade 498 cases (40.1%) followed by fourth decade 272 cases (21.9%), second decade 222 cases (17.9%). It has been shown that almost all age groups are represented with the majority of the injured were adult and middle aged, vast majority of the studies agree that most common victim of the GSI were male.²⁵ Studies were carried out in India,²⁶ German²⁷ and Nigeria²⁸ to evaluate the firearm injuries revealed

that most victims were male in the age group of 20 to 30 years, similarly in the study carried out in the Transkei region of South Africa and in England. Legal ownership of guns, male gender and youth has been identified as risk factor for firearm injuries.²⁹

The male sex predominance in this study is not surprising, as males engage more in violence, hunting, jobs and cattle rearing acts. It can be estimated that youth get more involved in fights and therefore mostly are involved because of their aggressive attitude, which the elderly people usually avoid fights as they are wiser and act with restraints. While female reside inside the houses and take less part in such incidences, usually they receive injuries while rescuing their family members.

In this retrospective study, GSI occurred more in rural area than urban area which is comparable to a study on firearm injuries which reported that such injuries are more common in rural than urban areas because of the facts that farmers always keep weapon to protect the lands and rural areas have less legal control than the urban area.²⁹ In our study GSI occurred more in the summer season, these findings are partially agreed with that reported in summer months and this study disagree with the study carried out in Alexandria Egypt where researcher reported that 31.5% of the injuries occurred during autumn month while the least occurred in summer months 20.4%. The same study also found however most firearm injuries 46.3% occurred at night,³⁰ long of length of day light, high temperature in summer involves people in fighting and violence. The fact of such happenings more at night were due to reason that illegal activities are carried out at night as the accused disappear after the getting the benefits of darkness.

In current study, 33.2% injured had no relation with the accused. Study carried out in the Alexandria reported that regarding the relationship between injured and accused, 83.3% were strangers while 16.7% accused was the family member or a friend. This is a result of prolonged family conflicts. The study also reported that most of the injuries are committed by the home made guns rather than using automatic

guns. Tracing of gun ownership is almost impossible and being cheaper they get damaged and often discarded after making a crime and thus detection becomes difficult. Crimes involving firearm indicated that the firearm are sold legally or illegally across the country without control.³¹ Similarly, in the Alexandria study, it was found that most common type of hand guns used was either a revolver or pistol followed by home made shot guns in 5.9% and home made hand guns in 11.1% of the cases.³²

A study on firearm fatalities in El-Fayoum Governorate during several years period found that among total number most of the crime were committed by using hand made firearms³³ while in another study in Suez Canal area Egypt, 26.9% crimes were committed by using automatic (machine gun), 22.8% by using locally made shot guns, 17.5% were committed by using hand made guns automatic, automatic pistols were used in 10.4% cases.³⁴

In the current study, the most common site of injury was lower limb, followed by upper limb, abdomen, chest, face, head, neck and perineum. While it is not in agreement with the results of the study carried out in Qena Governorate in Egypt, which reported that most common site of entrance wounds were chest and abdomen representing 23.3% and 23.4% respectively,³⁵ also in a similar study in El-Fayoum Governorate, the most common site of injury was chest 29.6% followed by abdomen the hand and buttock. In another study the most commonest site of entrance was in chest 32% of total GSI.³⁶ In another study the most commonest site of injury were head 36.7%, and chest 28.7%.³⁷ In another study carried out in Peshawar from June 2005 to February 2006, chest injury was 33.8%, followed by head and neck 25.6% and abdomen 16.5%.³⁷ Other studies where the motive was to kill victim show a similar pattern of regions of the body involved,^{38, 39, 40} however, where the motive was not to kill but was to injure the person without causing death, area involved was primarily the limbs,^{40, 41} mostly it has happened during armed robberies.

In our study, overwhelming majority of 61.1% cases had single fire arm injury which differs from the other studies in which majority of the cases had multiple firearm injury as would be expected in cases where high velocity automatic weapons were used, this is in line with other studies where automatic

weapons were commonly used.⁴¹

Civil Conflicts which occurred sporadically in Sialkot district over political, religious, ethnic differences were responsible for the greatest proportion of firearm GSI as compared to the armed robberies attacks which were responsible for greatest proportion of GSI in Nigerian Cities,²⁸ armed robberies were second to civil conflicts in our study.

CONCLUSION

Our study showed that most of the injured were males, in 3rd decade of life and most common in summer season, and rural areas. Research on GSI provides new results and develop information which can be used to assist medical resource allocations and preventive campaigns.

There is need for educational efforts and community, societal curriculum to reduce the GSI which is not possible without addressing root causes and bringing such changes which may minimize mortality, disability, and cost to community.

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