

# A 6 Year Analysis of Fatal Gunshot Injuries in the Central Region of Ghana

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**Citation:** Akakpo PK, Awlavi K, Agyarko-Wiredu F, Derkyi-Kwarteng L (2018) A 6 Year Analysis of Fatal Gunshot Injuries in the Central Region of Ghana. J Forensic Crime Stu 2: 302

**Article history:** Received: 18 August 2018, Accepted: 24 September 2018, Published: 26 September 2018

## Abstract

**Introduction:** Despite many newspaper reports of fatal gunshots in Ghana, there are no published data on gunshot fatalities in Ghana. Our objective was to determine the demographical characteristics of victims of fatal gunshots in addition to the incidence, social characteristics and forensic characteristics of these fatal gunshots in the Central Region of Ghana.

**Method:** Existing autopsy records including Coroner's inquest forms in the department of pathology of CCTH were searched from 2011 to 2017. The demographic, forensic and social characteristics of victims of fatal gunshots were reviewed and data entered into excel and analyzed.

**Results:** A total of forty (40) deaths due to gunshot were recorded over the 6 year period of the review with an annual incidence of 0.3 per 100,000 population. Most victims were young adult males (95%), with a male to female ratio of 19:1. The circumstances of death were mostly related to hunting (27.5%), social gatherings/public unrest (27.5%), household accidents involving children (20%) and armed robberies (17.5%). The commonest firearms used were shotguns (85%).

**Conclusion:** Fatal gunshots are not uncommon in the Central Region of Ghana. The demographical characteristics of victims are identical to those reported in literature, with fatalities mostly occurring in young adult males. Shotguns are the commonly used type of gun in fatal gunshots. There is high number of gunshot fatalities involving children in the rural areas of the Central Region.

**Keywords:** Gunshot; Fatal; Central Region; Ghana

## Introduction

Globally, firearms were used in 44 per cent of all homicides in 2016 [1]. In 2004, they were used in about 40 per cent of all homicides [1]. Global fatalities from firearms rose from about 171,000 in 2004 to 210,000 in 2016 [1]. Mortality due to gunshot injuries is on the increase globally and has wide regional variations [1]. In West Africa, ethnic unrests and recent civil wars combined with the activities of local and international terrorist groups has made firearms easily available [2]. This has resulted in an increase in the rate of armed violence with associated increased mortality. Gunshot has become a leading cause of violent deaths in some West African countries [1,2]. In Togo, Senegal and Benin, they accounted for over 50% of violent deaths [1]. In Nigeria, the end of the Civil War in the 1970s made firearms readily available, resulting in an increase in armed violence and related mortality [3]. The regional effect of recent Civil Wars in Liberia, Sierra Leone and Ivory Coast and the current armed unrests and terrorism in the West African region are yet to be reported.

Developing countries have higher rates of firearm related deaths if compared with industrialized countries [1]. Worldwide, males are more likely to die from firearm related injuries [1]. In the United States of America (USA), the industrialized country with the highest gunshot mortality rates, during the ten years from 2003 to 2012, the number of persons who died from firearm-related injuries in the United States (US) outnumbered US combat fatalities in World War II; they outnumbered the combined count of combat fatalities in all other wars in the nation's history. In the US, the mortality rate from firearm violence has remained essentially unchanged since just before the turn of the twenty-first century [4]. Gunshot deaths most commonly affect the economically active age groups of the population and the total societal costs of firearm injuries in the USA was estimated to be \$174.1 billion in 2010 [4].

In Ghana, there has been an increase in illegal arms and ammunition, with calls to review the Act that governs the possession of firearms [5]. Data on gunshot deaths in Ghana is however not readily available, though newspaper reports frequently mention fatalities from gunshot injuries mostly in relation to armed robberies and unrests involving the security services and the public. The Arms and Ammunition Act -1972 (NRCD9) governs the ownership of arms and ammunition in Ghana. Most Ghanaians are not aware of the laws governing possession and use of firearms and safe storage laws are non-existent, not well developed or are simply not adhered to. Overall, the availability of quality data on firearm deaths is poor worldwide. The reduction of firearm violence requires a more comprehensive understanding of its characteristics and drivers, including the motivations behind such violence, the identities of victims and perpetrators, locations of violent incidents, the types and the origins of weapons used, and the interaction of these parameters with other risk factors [5].

The objective of this study is to report the incidence and social circumstances of fatal gunshots in the Central Region of Ghana and review the demographic features of the victims in addition to determining the forensic characteristics of these fatal gunshots.

## Method

The autopsy suite of the the department of pathology of the Cape Coast Teaching Hospital (CCTH) is the only pathology center that serves the Central Region. All autopsies on unnatural deaths in the Central Region are done at the CCTH autopsy suite. The autopsy record book was reviewed for a six (6) year period spanning January 2011 to December 2017 and all deaths resulting from gunshots selected and analysed. The data was entered into an excell work sheet and frequencies drawn. In addition demographical and forensic pathological data on the site and nature of the gunshot wounds was reviewed to determine the type of firearm that was used. Information on the circumstances of the gunshot was obtained from police records and where possible information on whether the firearm that was involved was legally or illegally owned was obtained from police records.

## Results

Variables	Age groups				Total	Percent
	13mo-17yrs	18yrs-44yrs	45yrs-64yrs	≥65yrs		
<b>Gender</b>						
Male	8	24	4	2	38	95.00
Female	0	0	2	0	2	5.00
<b>Total</b>	<b>8</b>	<b>24</b>	<b>6</b>	<b>2</b>	<b>40</b>	<b>100.00</b>
<b>Type of gun used</b>						
Shotgun	8	18	6	2	34	85.00
Rifle	0	6	0	0	6	15.00
<b>Total</b>	<b>8</b>	<b>24</b>	<b>6</b>	<b>2</b>	<b>40</b>	<b>100.00</b>
<b>Circumstances of gunshot</b>						
Hunting	0	8	3	0	11	27.50
Reported suicide	0	1	0	0	1	2.50
Social unrest/gatherings	2	7	1	1	11	27.50
Robbery	0	5	1	1	7	17.50
Unsecured gun	6	1	1	0	8	20.00
Shot and dumped	0	2	0	0	2	5.00
<b>Total</b>	<b>8</b>	<b>24</b>	<b>6</b>	<b>2</b>	<b>40</b>	<b>100.00</b>
<b>Percent</b>	<b>20</b>	<b>60</b>	<b>15</b>	<b>5</b>	<b>100</b>	

**Table 1:** Table showing different parameters of gunshot fatalities

Location of injury	n=45	Percent
Head	10	22.20
Chest	21	46.60
Abdomen	7	15.60
Neck	2	4.40
Thigh	3	6.70
Buttock	2	4.40
<b>Total</b>	<b>45</b>	<b>100.00</b>

n>N (Multiple response)

**Table 2:** Table showing the site of gunshot wounds

The spread of shot for the shot gun injuries in which this was measured and recorded ranged from 6cm to 75cm. With the number of pellets retrieved in the shot gun injuries ranging from one (1) to forty (40) pellets. The estimated range of shot using Benard Knights proposed formula for approximating range of shot from spread of shot ( $\frac{1}{3} \times \text{spread of shot}$ ) = range of shot in meters means that the distance from which decedents were shot at was up to 25m (Table 1 and 2).

## Discussion

A total of forty (40) deaths due to gunshot were recorded over the 6year period of review. With a total population of 2,201,863 in the Central Region, the incidence of gunshot deaths over the six year period was 1.8 per 100, 000 population in the six year period studied and 0.3 per 100,000 people annually. Though national rates for Ghana are not readily available, this is lower than rates quoted for some other West African countries and for the United States [1,6]. Majority of individuals who died from gunshot in this study were males (95%), with a male to female ratio of 19:1. Though the finding of a male preponderance is not different from findings in other studies both within West Africa and in other developed countries, our ratio of male to female is markedly higher than in other studies in the West African subregion; 10:1 in Ibadan, Nigeria, 4.8:1 in South Eastern Nigeria and 5.5:1 in Douala and Yaounde, Cameroon. In California, USA and Hamburg, Germany, male to female ratios of 5.3:1 and 3:1 were found [3]. Our study suggests that gunshot deaths in the Central Region of Ghana are less likely to involve females.

Most gunshot deaths in this study occurred in the 18-44years age group (60%). This is comparable to findings in Nigeria where up to 60% of deaths occurred in the productive age group (20-40years) [2,3]. Again, in Nigeria, up 73% of deaths occurred in the 20-49 years age group in Ibadan [3]. In the USA, homicide related gunshots are commonest in males 20-25years of age [1].

This age bracket was followed by the age range 13months – 17years. This is at variance with findings in other studies in the subregion that found that the second most common age range that is affected by gunshot fatalities was that of individuals older than 40years [2,3]. Our study suggests that gunshot fatalities are rather common in children in the Central Region of Ghana. This is at variance with studies in Nigeria where no gunshot fatality was reported in a children under 10years in one study and in the other only 10% of 30 fatalities occurred in children younger than 10years. The circumstances under which these fatalities occurred may help explain them. All the eight (8) deaths (20%) that occurred in children were in rural areas outside the Cape Coast metropolis and were a result of mostly other children shooting other children with their parents loaded unsecured shotguns or while playing with an unsecured gun in their parent's room. In all the cases, the children were shot at close range with pellets and wad retrieved from the wounds. Though most studies suggest that firearm injuries are more common in urban areas, our findings corroborate some studies in the United States of America that found that gunshot fatalities in children are more likely to occur in rural areas compared to urban areas [7]. The studies conclude that children in rural areas are thus at increased risk of firearm related mortality [7]. Firearm fatalities are linked to the availability of firearms, and safe storage laws intended to make firearms less accessible to children appear to prevent unintentional shooting deaths among children younger than 15 years [8]. In this regard, safe storage practices, including keeping firearms stored unloaded, in a locked place, separate from ammunition, and/or secured with an extrinsic safety device, have been shown to be protective for unintentional firearm shootings and suicide attempts among adolescents and children [9]. In Ghana, safe storage laws are non-existent.

A Coroner's autopsy is carried out on all individuals who die of gunshot in Ghana. At the end of these autopsies, it is determined whether a shotgun or a rifle was the cause of the gunshot. This conclusion is arrived at based on the forensic characteristics of the gunshot wound and the ammunition recovered if any. These findings are corroborated by the history provided by the police. In this study, 85% of gunshots were due to shotguns while 15% were due to rifles. By design, shotguns are low velocity weapons that have a smooth bore and fire ammunition containing mostly pellets. In Ghana, these are used for hunting in many villages. Some private individuals also own these guns. It is also usual for these shotguns to be fired at festivals. The ease of availability of shotguns in Ghana may be due to the existing law governing their possession as opposed to rifles. Again shotguns are cheaper and more readily available at licensed gun dealerships and at local gunsmith shops. There was no documentary evidence that any of the shotguns that caused these deaths were legally owned in the thirty four (34) shotgun related gunshots. Further analysis of the six(6) gunshots caused by rifled weapons showed that, four (4) of them involved the police while two (2) were individuals who were found shot in the back at contact range at almost the same site and dumped at the same spot. The predominance of shotgun wounds is at variance with studies in Nigeria which report that most gunshot deaths were from rifles and not shot guns [2,3]. One study however mentions that shotgun injuries are also common because of the availability of homemade shotguns in Nigeria, a situation we cannot ascertain in this study. The number of pellets retrieved from the wounds ranged from one (1) pellet to 40 pellets with the pellet count exceeding 10 in most of the cases, though this information was not available for a significant number of the cases. Concerning range of shot, the farthest range was 25m.

The two most common circumstances around which most of the gunshots occurred were social gatherings / festivals (27.5%) and hunting accidents (27.5%). In one such incident, five (5) individuals were accidentally killed when a shotgun loaded with live ammunition went off during a chief's coronation. The others included a violent demonstration during which live ammunition was used by the police in an attempt to restore order. Hunting related accidents are also responsible for a large proportion of gunshot deaths and usually follows a hunter allegedly mistaking a human for an animal. These occur in the villages surrounding the Cape Coast metropolis and, in all cases, involved the use of shotguns. These circumstances were also reported in the study in North

Eastern Nigeria though they had fewer deaths under such circumstances. They had 13.5% of their reported deaths due to accidents involving the police and 1.7% of deaths due hunting accidents [9].

Most of the fatal gunshots were to the chest (46.60%) followed by the head (22.20%), abdomen (15.60%), thigh (6.70%), neck and buttock. This is similar to the study in Ibadan though their leading anatomical site was the head (45.5 %) followed by the abdomen (36.4%). The trend shows that most fatal gunshots in our region are to the chest, head or abdomen.

## Conclusion

Fatal gunshot wounds are not uncommon in the Central Region of Ghana. Though overall rates are low, the demographical features are similar to those of other countries with most victims being males in the working age group. There is a high incidence of fatal gunshot wounds in children in the rural areas of the Central Region of Ghana. Shot guns are the commonest firearm used in these fatal gunshots. Gun ownership rules in Ghana must be strengthened and safe storage laws must be enacted and enforced, especially in the rural areas.

## References

1. Claire Mc Evoy, Gergely Hideg (2017) Global violent deaths, Small arms survey. Small Arms Survey, Graduate Institute of International and Development Studies, Geneva, 2017.
2. E Ojo, A Ibrahim, S Alabi, S Obiano (2007) Gunshot Injuries in A North Eastern Nigerian Tertiary Hospital. *The Internet J Surg* 16.
3. UO Eze, EEU Akang, WO Odesanmi (2016) Pattern of gunshot deaths in a Nigerian Tertiary Health Institution. *Internet J Med Update* 11: 25-8.
4. Wintemute GJ (2015) The Epidemiology of Firearm Violence in the Twenty-First Century United States. *Annu Rev Public Health* 36: 5-19.
5. Alice Adu (2017) Small Arms & Light Weapons Ghana's struggle with illegal guns.
6. World Facts, countries with the highest rates of firearm related deaths (2018).
7. Gabriel B Eber, Joseph L Annest, James A Mercy, George W Ryan (2004) Nonfatal and Fatal Firearm-Related Injuries Among Children Aged 14 Years and Younger: United States, 1993-2000. *Pediatrics* 113: 1686-92.
8. Centers for Disease Control and Prevention, USA. *MMWR Morb Mortal Wkly Rep* 1997 46: 101-5.
9. Peter Cummings, David C Grossman, Frederick P Rivara, Thomas D Koepsell (1997) State Gun Safe Storage Laws and Child Mortality Due to Firearms. *JAMA* 278: 1084-6.