AUDIT OF GUNSHOT INJURIES IN A SOUTHERN NIGERIAN TERTIARY HOSPITAL

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ABSTRACT

Background: There is a dearth of data on ballistic related injury from developing countries. The pattern of gunshot injuries from Uyo, Akwa-Ibom State is yet to be evaluated. The aim of this study was to evaluate the pattern of gunshot injuries presenting to the tertiary hospital in Uyo, Akwa-Ibom State over a 22 month period from 2013 to 2014, using data from the trauma registry at the University of Uyo Teaching Hospital.

Methods: A retrospective study. Data on gunshot injuries in 2013 and 2014 was abstracted from the trauma registry.
Results: Twenty-seven patients sustained gunshot injury over the period of the study. The male to female ratio was 5.8:1. Mean age was 34 years. Median time to presentation was 5.1 hours (IQR) (2.9 - 10.4). Seventy percent of injuries occurred at home or on the road. Twenty six percent of injuries occurred in the trunk. The low to medium socioeconomic group had 88.9% of the patients.

Conclusion: The pattern of gunshot injuries in Uyo, Akwa-Ibom State are similar to that found in other non-combatant zones of Nigeria. However, it was noted that the numbers per year were relatively fewer than those from the South-West of Nigeria; most patients were from the low to medium socioeconomic group.

Key words: Gunshot injury, Trauma registry, Nigeria

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INTRODUCTION

There is a global rise in the incidence of gunshot injuries, due to the recent escalation in insurgency-based violence, which does not spare civilians from being casualties of violence.[1] Nigeria is not spared this blight on account of the Boko Haram insurgency mostly in Northern Nigeria.[1] In Nigeria, the profile of non-combatant gunshot injuries is mostly related to armed robbery.[1,2] In South Africa, firearm injury to children is usually unintentional.[4] There is a dearth of data on ballistic related injury from developing countries.[5] The pattern from Uyo, Akwa-Ibom State in the South-South region of Nigeria is yet to be evaluated.

Globally, the trauma registry is a core tool for providing data on injuries and the trauma registry at University of Uyo Teaching Hospital, though in its infancy is yielding insights into the local pattern of injury.[6,7]

The objective of this study was to evaluate the pattern of gunshot injuries presenting to the tertiary hospital in Uyo, Akwa-Ibom State in the year 2013 and 2014.

MATERIALS AND METHODS

Data on gunshot injuries was abstracted from the Trauma Registry at University of Uyo Teaching Hospital (UUTH), from January 2013 to October 2014. The data abstracted included the time and place of the injury, the duration to the hospital, the circumstances surrounding the injury, the anatomical site(s) of injury, the treatment offered and the patients movement on leaving the emergency department.

Inclusion criteria – All gunshot injury victims presenting to the accident and emergency department of the University of Uyo Teaching Hospital, from January 2013 to October 2014.

Exclusion criteria: Patients dead on arrival.

The data was inputted on Microsoft Excel ®

and was analyzed to yield age range and means and items were counted to yield frequency data.

RESULTS

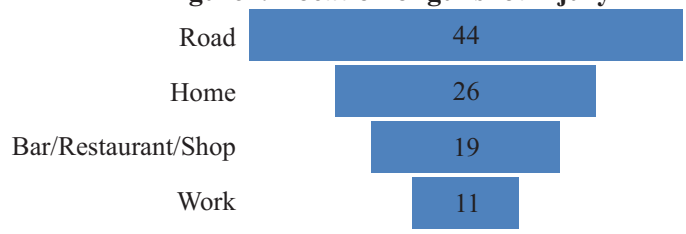
There were 27 patients admitted with gunshot injury during the study period. Table 1 summarizes the sociodemographic data.

Table 1: Sociodemographic data

Sex		Percent %
Male	**23**	**85**
Female	4	15
Age (years)		
Range	13 ± 70	
Mean	33.93 ± 12.37	
Occupation		
Small business owner	**10**	**37**
Artisan	4	15
Civil servant	4	15
Unemployed	3	11
Driver	3	11
Student/pupil	2	7
Security	1	4
Socioeconomic group		
Low to medium	**24**	**89**
High	3	11

Table 2: Context of gunshot injury

Figure1: Location of gunshot injury



Area of body most affected	Frequency	Percent %
Soft tissue (Skin)	**7**	**26**
Upper limb	5	19
Lower limb	4	15
Chest	4	15
Multiple	3	11
Abdomen	3	11
Head/Neck	1	4
Intent and by whom		
Stranger	**19**	**70**
Undetermined	4	15
Unintentional	3	11
Acquaintance	1	4
Time to presentation (hours)		
Median (IQR)	5.1 (2.9 to 10.4)	
Range	1 to 144	

Most of the gunshot injuries occurred outside the home – about 75%. About 25% of the injuries were mostly to the integument. The assailant was unknown to the victim in 70% of cases, while in 4% the assailant was an acquaintance of the victim. The median time to presentation at hospital was 5.1 hours. No patient arrived at the hospital less than one hour following the injury.

Table 3: Management of the patients on arrival at the hospital

Procedure	Frequency	Percent %
Dressing	**12**	**44**
Splint/cast	7	26
Debridement	4	15
Suture	4	15
Surgery		
No surgical procedure	**16**	**59**
Closed thoracostomy tube drainage	3	11
Exploratory Laparatomy	3	11
External fixator	2	7
Fasciotomy	2	7
Patient disposition		
Orthopaedic ward	**8**	**30**
Treated and released	7	26
Left Against Medical Advice	6	22
General Surgery ward	4	15
Surgical Out-Patient	2	7

The management options offered were resuscitation and debridement in all cases, with splints and / or casts in patients with limb injuries. Most patients had no surgical procedure (59%). Following admission into the accident and emergency and initial resuscitation, a third of the patients were admitted into the Orthopaedic ward, while about 25% were treated and released.

DISCUSSION

There has been an increase in the incidence of gunshot injuries in Nigeria over time and this has been related to insurgency and gang violence.[1,8] However, the pattern from Akwa-Ibom State is yet to be reported. This study adds the long time to presentation at hospital, relative to the golden hour of trauma – median of 5.1 hours. This is much lower than the findings by Udosen et al from Calabar of an average duration to presentation of 96.3 hours. The dense road traffic in Calabar and the great distance of some rural areas from the main town, may account for this difference. In addition, using the median instead of the mean may have yielded a lower figure, as the median is more resistant to outliers – their range was 4 to 120 hours, while the range in this study was 1 to 144 hours. There is, in most of Nigeria, the menace of traditional bonesetters, who are often the first ports of call for the injured, further delaying presentation to hospital.[9,10] Its worthy of note that figures from Lagos and Irrua place the time to arrival in hospital, as 38% and 64% of cases respectively, arriving less than 6 hours after injury.[2,11] These figures show a major disparity, probably due to well known dense traffic pattern in Lagos hindering prompt arrival in hospital. However, direct comparison with the figures from Uyo and Calabar is hindered due to lack of standardization. The median is suggested for data on time to arrival in hospital for future studies.

In addition, this study also adds the socioeconomic group of most of the victims to be in the low to medium group (89%). This has implications for the treatment of gunshot injury patients in Akwa-Ibom State, due to the out-of-pocket payments (OOPS) for personal healthcare in Nigeria.[12] The male preponderance and 4th decade average age distribution in our study is similar to what obtains in the literature and brings to the fore the negative socioeconomic impact of morbidity and mortality among the more active segment of the Nigerian society.[3,13]

In our study, the armed assailant attacked the victims outside the home in 75% of cases and was a stranger to the victim in 70%. This is the usual scenario in armed robberies. Other

studies show the incidence of armed robbery to be 70% (Irrua - 2005), 60% (Abakaliki - 2017) , 71% (Ibadan – 2006), 89% (Maiduguri – 2012) and 20% (Calabar - 2006).[2,3,8,13,14] The discordant finding of 20% in Calabar occurred in the context of most cases having been shot by policemen. These studies show the high rate of armed robbery to be an overwhelming social malady in Nigeria, which has remained mostly unchanged in the last decade and requires major intervention. In Durban, South Africa the rate of armed robbery based gunshot injury was 60% in 2011 but South Africa has the third-highest rate of homicide in the world and a major component of this is intimate partner violence – the demographic in South Africa seems to be a residual of the apartheid era when guns where available in large numbers, unlike in Nigeria where high-energy gunshot wounds are not common.[3,15]

Our study shows most injuries to be in the soft tissue i.e skin, indicating low-energy gunshot wounds. This is in keeping with our finding that most patients required no surgical procedure (59%) and many required only dressing (44%). Omoke (Abakaliki) and Ogunlusi (Ekiti) found 88% and 74% of cases respectively, to have sustained low-energy gunshot injuries.[13,16] Davies (UK) found 100% of inner city gunshot injuries to be due to low-energy firearms and noted the possible relationship between strict gun control laws and low energy based gun assault.[17] Studies in the USA have noted that they have the highest gun possession in the world and the highest rate of gun based homicide, however there is much contention with a simple linear relationship.[18] This suggests that the pattern in Nigeria is related to our strict gun control laws and such laws need to be strengthened. However in Maiduguri (Nigeria), the firearms used during the Boko Haram insurgency were all high-energy.[1] This is a combatant situation and the aim is to kill in addition to the insurgency mechanism providing modern guns, hence the use of high-energy firearms. In the civilian setting in Nigeria, the use of low-energy guns predominates, probably because modern pistols and rifles are not readily available and the armed assailants in robberies are probably not setting out to kill.

This work contributes to an identified need for data about ballistic related injury, from developing countries. It also makes a case for the widespread use of trauma registries as a low resource tool for injury related data capture in resource constrained settings. More research is needed on the pattern of gunshot injury from resource limited countries, especially in Sub-Saharan Africa.

CONCLUSION

The time to presentation at hospital in Uyo is a median of 5.1 hours. The median is recommended as the measure of central tendency for time to arrival at hospital in studies on gunshot injury. Most gunshot injury victims are in the low socioeconomic group. Our strict gun control laws may be related to our low incidence of civilian high energy gunshot injury – research on this relationship are needed.

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