ESJ Natural/Life/Medical Sciences

Epidemiology of Injuries in the Radiology Department of a Teaching Hospital

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Doi:10.19044/esj.2022.v18n36p24

Submitted: 27 July 2022
Accepted: 21 November 2022
Published: 30 November 2022

Cite As:
Eze J.C., Nwodo V.K., Agbo J.A., Ikechukwu M.C. & Obasi F.C. (2022). *Epidemiology of Injuries in the Radiology Department of a Teaching Hospital*. European Scientific Journal, ESJ, 18 (36), 24. https://doi.org/10.19044/esj.2022.v18n36p24

Abstract

Background: Injury has become a public health problem all over the world, and it is associated with high morbidity and mortality. **Objective**: This paper focuses on determining the epidemiology of injuries in the Radiology Department of Nnamdi Azikiwe University Teaching Hospital, Nnewi. **Method**: A retrospective research design was adopted for this study. Request forms of patients were collected from the register in the department. Five hundred and twenty (520) request forms were collected but twenty one (21) were excluded because they did not contain sufficient information needed for the study. The picture and archives communication system (PACS) was also utilized to ensure that information obtained from the register corresponds with the patients who took part within the period of the study. Data was analyzed descriptively using SPSS version 20. Results were presented in frequency

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

tables and percentages. **Results**: The injuries involved 376 (75.2%) males and 123 (24.8%) females. Road traffic accident accounted for 67.5%, and it was the most occurring injury. Injuries due to fighting accounted for 2 (0.4%), which was the least occurring. Most injuries (18.8%) occurred within the age range of 21-30years, which was closely followed by the age range of 31-40 years (18.2%). Majority of the injuries involved the whole spine (18.5%), which is also followed by chest injuries (18.2%). **Conclusion**: The injuries recorded involved many body parts and more males than females were affected. Road traffic accident was the major cause of the injuries.

Keywords: Epidemiology, Hospital, Injury, Radiology, Teaching

Introduction

Injury is also known as trauma and it can cause damages to the body. Injury has become a public health problem worldwide and it is associated with high morbidity and mortality (Dee, 1990; Park, 2000; Krug et al., 2000). It has been noted that injury accounts for 9.6% of global mortality burden, leading to over five million deaths annually and 138 million disability adjusted life years (DALYs) (Lozano et al., 2010). People living in low- and middle-income countries (LMICs) experience this burden more due to minimal or absence of equipment to handle the injuries (Chandran et al., 2010; WHO, 2004). The cause of injuries varies from place to place. Road traffic accidents, falls, assaults, firearm injuries, burns, sports injuries, animal bites, and industrial accidents are some causes of trauma or injuries (Chalya et al., 2013; Demyttenaere et al., 2009). Previous studies revealed that road traffic accident is the most common cause of injury.

There is a prediction that deaths from road traffic accidents would increase from 1-2 million in 2002 to 1.9 million globally, making it the third leading cause of DALYs (Murray et al., 1994). In Nigeria (which is a developing country), there is increasing industrialization, high velocity vehicles, increasing ethno-religious clashes, and recently widespread terrorist attacks which has resulted to sudden, unexpected mass casualties that has affected secondary and tertiary health centers (Hardy, 2017).

Patients with any form of injury are presented first in the trauma or accident and emergency unit before being referred to any other unit of the hospital, where more information about the injury is ascertained. Most of the patients who present with injury pass through the radiology department for one imaging procedure or another. Radiology service is mainly diagnostic and provides the clinicians with relevant information about the degree of the injury. There is paucity of information on the type and cause of injuries recorded in the radiology department. This study is therefore aimed at

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

evaluating the epidemiology of injury in the radiology department of a teaching hospital.

Materials and Methods

This study was a retrospective study of injured patients who presented themeselves to the radiology department of Nnamdi Azikiwe University Teaching Hospital, Nnewi, from January 2016 to September 2019. The hospital is the only federal teaching hospital in Anambra state and therefore serves as a referral center. Information about the patients were collected from the department's register leading to retrieval of the patients' request forms. A total of 520 request forms were collected, but 21 were excluded because they did not contain adequate information needed for the study. Those that had the complete information, including the age, gender and cause of injury, were then utilized for the study. The picture and archives communication system (PACS) were also utilized to ensure that information obtained from the register corresponds with the patient attended to within the period of the study.

Method of Data Analysis

Data was analyzed using statistical package for social sciences (SPSS) version 20. Descriptive statistics was used and results were presented in frequency tables and percentages.

Results

Table 1. Distribution of age and gender of patients

Age range (yrs)	Male n (%)	Female n (%)	Total
< 1	4 (0.8)		4 (0.8%)
1-10	30 (6.0)	15 (3.0)	45 (9.0)
11- 20	36 (7.2)	13 (2.6)	49 (9.8)
21- 30	94 (18.8)	16 (3.2)	110 (22.0)
31-40	91 (18.2)	22 (4.4)	113 (22.6)
41-50	51 (10.2)	13 (2.6)	64 (12.8)
51-60	22 (4.4)	27 (5.4)	49 (9.9)
61-70	30 (6.0)	11 (2.2)	41 (8.2)
71-80	12 (2.4)	5 (1.0)	17 (3.4)
81-90	6 (1.2)	1 (0.2)	7 (1.4)
Total	376 (75.4)	123 (24.6)	499 (100)

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Table 1 shows that majority of the individuals involved in injury were males. Most of the injuries recording 18.8% and 18.2% occurred within the age range of 21-30 years respectively.

Table 2. Aetiology of injuries

Injuries	Frequency	Percentage (%)
Road traffic	337	67.52
Fall from height	64	12.83
Sports injury	20	4.01
Dislocation	19	3.81
Gunshot	10	2.00
Violence	42	8.42
Animal bite	5	1.00
Fight	2	0.41
Total	499	100

Table 2 shows that the major cause of injury, registering 67.5%, was road traffic accident, while Fall from height was the second cause of injury. Fighting was the least cause of injuries which was recorded (0.4%).

Table 3. Aetiology of injuries according to age

Age (yrs)	Road traffic accident	Sports injury	Fall from height	Gun shot	Dislocation	Violence	Animal bite	Fighting
<1			4 (0.8)					
1-10	26 (5.2)	1(0.2)	3 (0.6)			4 (0.8)		
11-20	33 (6.6)	4 (0.8)			1 (0.2)	11 (2.2)		
21-30	72 (14.4)	10 (2.0)	12 (2.4)	3 (0.6)	4 (0.8)	11 (2.2)		
31-40	76 (15.2)	5 (1.0)	13 (2.6)	7(1.4)	5 (1.0)	6 (1.2)		2 (0.4)
41-50	53 (10.6)		7 (1.4)		4 (0.8)			
51-60	27 (5.4)		17 (1.4)		2 (0.4)	2 (0.4)		
61-70	33 (6.6)				3 (0.6)	4 (0.8)	3 (0.6)	
71-80	5(1.0)		6(1.2)					
81-90			2(0.4)					
TOTAL	337(67.52)	20(4.01)	64(12.83)	10(302)	19(3.81)	42(8.42)	3(0.6)	2(0.4)

Table 3 shows that most of the RTAs occurred at the age range of 31-40 years. Animal bite and fighting were the least cause of injuries and it occurred within the age range of 61-70 years and 31-40 years respectively.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Table 4. Location of injuries

Location	Frequency	Percentage (%)
Skull	37	6.4
Paranasal sinus/		
Paranasal space	8	1.4
Mandible	7	1.2
Cervical spine	49	8.6
Thoracic spine	8	1.4
Shoulder	21	3.7
Clavicle	4	0.7
Shoulder	4	0.7
Chest	104	18.2
Ribs	10	1.8
Abdomen	8	1.4
Arm/humerus	13	2.3
Elbow	2	0.4
Forearm	4	0.7
Hand	15	2.6
Wrist	10	1.8
Pelvis/Hip	20	3.5
Lumbosacral	5	0.9
Complete spine	106	18.5
Thigh/Femur	32	5.6
Knee	15	2.6
Leg/Tibia fibula	35	6.1
Foot	24	4.2
Ankle	27	4.7
TOTAL	572	100

Table 4 shows the types of injury recorded at the radiology unit, with whole spinal injury recording 106 (18.5%) as the commonest. This was followed by chest injuries which accounted for 104 (18.2%) of the cases. The least affected part was the elbow, recording 0.4%.

Discussion

Findings from this study has shown that most patients that sustained injuries at the time of the study were 376(75.2%) males and 123(24.8%) females. This is in agreement with some previous studies (Thanni & Kehinde, 2006; Peden et al., 2012; Elachi et al., 2015; Puvanachandra et al., 2022). From observations, males are usually more involved in travelling along the roads than females as they seek to meet the needs of their families. In the course of this, some get involved in one form of injury or the other, and this may be the reason why the number of males is higher than that of females in this study.

Consequently, this present study shows that the injuries were recorded mostly within the age range of 21-30 years and is closely followed by the age range of 31-40 years with males forming the majority. These age ranges involve young adults who are at the active stage of their lives. This finding is in agreement with other previous studies (Monini et al., 2000; Museru et al., 2001; Kobusingye et al., 2002). Of these patients, 442(84.4%) sustained multiple injuries as compared to 78(15.6%) that had single injuries. This could be as a result of the source/cause of their injuries being traumatic.

From this study, it can be seen that the leading cause of injury was road traffic accidents. This is in agreement with other previous studies (Chalya et al., 2013; Tadessa et al., 2014; Santosh et al., 2021). The roads within the study area are in very bad condition and sometimes very unmotorable. As a result, commuters still have to use these roads either to go to work or to the market to source for their daily bread. The attitude of the road users may also be another contributing factor because even when the roads are good, drivers are seen to be reckless, they overspeed, and they even go to the extent of disobeying traffic rules. Sometimes, the regulatory agents do not help matters because they do not punish traffic defaulters, but they rather collect gratifications from them and set such defaulters free. Nigeria is a low income country with high poverty level and because of this, many vehicles seen on the roads are not road worthy. Some of the vehicles are under hire purchase and because of this, some of these drivers resort to overspeeding in order to meet up with the amount of money they have to remit to thier employers. It is also possible that some drive when they are drunk. The above mentioned factors may be the reasons for the high rate of road traffic accidents in this study.

Falls from height contributed to 12.8% of the aetiologies of injury recorded. It was the second leading cause of injury.This finding is close to that of Onyemaechi et al. (2018) who recorded 16%. However, Thanni and Kehinde (2006) and Elachi et al. (2015) reported low prevalence of 2.6% and 1.9% respectively. Huda et al. (2012) in India reported a fall prevalence of 29.5%. This injury was noticed more among males within the young adult age range. Fall from height may be as a result of climbing of trees, especially palm

trees and other economic trees. It may also result from slipping on wet floors or even from storey buildings. The cause of fall was however not recorded in this study.

Other causes of injury in this study include; gunshots 10(2%), dislocation 19(3.8%), sports 20(4.0%), from animal bite 5(1.0%) and 2(0.4%) as a result of fighting. In this study, it was observed that multiple injuries (84.4%) occurred more than single injuries (15.6%). More males were also involved in multiple injuries than females.

The most common site or region of injury in our study is the entire spine. This is contrary to the findings of Onyemaechi (2018) who stated that the lower limb was the most common site of injury. The skeletal muscle and head regions were the most affected body region as recorded by Chalya et al. (2010) and Aninpelu et al. (2007). In their study, Deepark et al. (2020), however, observed that the most affected body region was the soft tissue. The reason for this difference may be because our study was restricted to the radiology department while that of Onyemaechi was done in the emergency unit. It is most likely that some of the patients seen in the emergency unit were not referred to the radiology department. Most of the injuries were due to RTA and this may have contributed to the spine being the commonest site of injury. Individuals who fell from a height most of the times end up with spinal injury.

Conclusion

Most of the patients that sustained injuries within the period of the study were males and the major cause of their injuries was road traffic accident. Most injuries recorded were injuries to the spine, and this is followed by chest injuries. People that sustained injuries from accident were mostly from age 21-30 years and 31-40 years.

Recommendations

It is recommended that the citizens should adhere to traffic rules and regulation to help reduce road traffic accidents, which is the major cause of injury.

The government should construct good quality roads to reduce road traffic accidents.

Road users should also obey traffic rules.

Limitations of the Study

The injuries that were recorded does not represent the total injuries in the entire hospital because not all patients that present to the hospital with injuries were sent to the radiology department.

The mortality rate of those that presented in the department with injuries were not considered.

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