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# Evaluation of Trauma in Children in Aba Nigeria

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**Abstract:** Background: Trauma is a leading cause of morbidity and mortality in children. The incidence has been on the increase in our sub-region in recent years. The aim of this study is to present the clinical presentation, management and outcome of children involved in trauma in at the Abia State University Teaching Hospital. Methods: A prospective study of children managed for trauma in our centre from January 2018 to December 2018. A Proforma was designed to include demographic data, clinical presentation, investigation, treatment and outcome. These data was collated and analysed using SPSS version 17.0. Results: A total of 300 patients presented to our trauma centre during the study period. There were 200 boys and 100 girls. The median age was 6 years (range 1 month to 15 years). The median duration of presentation was 4 hours (40 minutes to 7 days). 100 patients presented between 12 am and 7pm while 200 patients were seen between 7pm and 12 midnight. At presentation 250 patients were in pain, 150 bleeding, 120 had a swelling of part of the body, 20 were unconscious, and 10 had polytrauma. The cause of the trauma were Tricycle accident 100, motor vehicle 80 patients, burns 40, fall from height 20, gunshot injuries 10 and others 10. The investigations include X-rays, FAST, CT-scan, haematological and biochemical test. The diagnosis at presentation revealed; 40 head injury, 100 lacerations, 10 chest injuries, 30 blunt abdominal injuries, 20 pelvic injuries, 40 burns, 40 limb fractures, 20 poly-traumatised patients. There were 30 (10%) mortalities. Conclusion: The result in this series shows good outcome in children managed for trauma in our centre. There may therefore be the need for training, procurement of equipment and the establishment of paediatric trauma centres in the various sub-regions in the country. This will help in reducing morbidity and mortality.

**Keywords:** Trauma, Children, Evaluation

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## 1. Introduction

Trauma is a leading cause of morbidity and mortality in children [1]. It has almost surpassed infectious diseases and malignancy as a major cause of death in children [2]. The burden of trauma is enormous and has created a major public health problem globally [3]. Trauma is the leading cause of disability, death, and hospitalisation among children and adolescents globally. It constitutes an enormous financial burden on society in particular and governments in general. The impact of injury in developing nations has not been as extensively studied as in industrialised countries, and therefore often is not fully appreciated. The purpose of studying injury and its causes is to establish programmes to prevent and control its development and spread. Injury is

known to be a leading threat to the health of children in Africa. This trauma burden is even more marked in low and middle income areas like Nigeria. The current trend is to prevent this menace of trauma [4]. To this end many trauma centres and trauma systems are being developed. Trauma system will require communication capabilities to be able to triage and rapidly transport injured children from the field of injury to a suitable facility for immediate treatment and rehabilitation. Frankly, the focus in the African sub-region should be on injury prevention because treating injuries is very expensive and the costs of injuries to society are enormous. These trauma centres are equipped with state of the art facilities to sustain and maintain life. In these centres the advanced life support protocol for resuscitation is the role and has been noted to have a marked influence on outcome

[4-5]. For most parts of the African sub-region, there are no trauma registries, and as such, it is difficult to know how much trauma contributes to injuries and death. Accurate data on the extent and nature of injuries are required to formulate effective policies targeted at reducing the burden of injury and in particular to compare the contribution to morbidity and mortality due to injuries with that due to infectious diseases and malnutrition. Most of the studies on injuries in the sub-region are hospital-based; given the limited access to hospital care and emergency transport in low-income countries, these studies are unlikely to be truly representative of what is happening in the communities. The aim of this study is to present the clinical presentation, management and outcome of children involved in trauma in at the Abia State University Teaching Hospital Aba Nigeria

## 2. Methods

A prospective study of children managed for trauma at the Abia State University Teaching Hospital Aba Nigeria from January 2018 to December 2018. A Proforma was designed for demographic data, clinical presentation, investigation, treatment and outcome. These data was collated and analysed using SPSS version 17.0 for proportions and percentages.

## 3. Results

### 3.1. Demography

A total of 300 patients presented to our trauma centre during the study period. There were 200 boys and 100 girls. The median age was 6 years (range 1 month to 15 years) as shown in Table 1.

*Table 1. Age and sex distribution.*

Age in years	boys	girls	total	percentage
1-5	30	10	40	13
6-10	100	50	150	50
11-15	70	40	110	37
Total	200	100	300	100

### 3.2. Clinical Presentation

The median duration of presentation was 4 hours (range 40 minutes to 7 days). 100 patients presented between 12 am and 7pm while 200 patients were seen between 7pm and 12 midnight. At presentation 250 patients were in pain, 150 bleeding, 120 had a swelling of part of the body, 20 were unconscious, and 10 patients had polytrauma as shown in Table 2.

*Table 2. Clinical features.*

Clinical features	Number of patients	Percentage
pain	250	83
bleeding	150	50
Swelling of part of the body	120	40
Unconscious	20	7
polytrauma	10	3

### 3.3. Cause of Trauma

The causes are road traffic accident in 180 patients, burns 40, fall from height 20, gunshot injuries 10 and others 10 as shown in Table 3.

*Table 3. Cause of trauma.*

Cause of trauma	Number of patients	Percentage
Road traffic accident	180	60
Burns	40	13
Falls from height	20	7
Gunshot injuries	10	3
Others	10	3

### 3.4. Diagnosis

The investigation done were X-rays, ultrasonography, CT-scan, haematological and biochemical test.

The diagnosis at presentation revealed; 40 head injury, 100 lacerations, 15 chest injuries, 30 blunt abdominal injuries, 20 pelvic injuries, 40 burns, 60 limb fractures, 25 polytraumatized patients as shown in Table 4. There were 30(10%) mortalities.

*Table 4. Diagnosis.*

Diagnosis	Number of patients	Percentage
Lacerations	100	33
Limb fractures	60	20
Burns	40	13
Head injury	40	13
Pelvic injury	20	7
Chest injury	15	5
Polytrauma	25	8

## 4. Discussion

Trauma is becoming a major killer of children in developing countries as infection and malnutrition are being controlled. Trauma constitutes a significant portion of preventable paediatric emergency department visit. Injuries are recognized as constituting a major health problem around the world and continue to be the most common cause of mortality and morbidity among the paediatric population. The present study showed a preponderance of male over female in ratio of 2:1. This finding was consistent with studies conducted by Chirdan et al in Jos Nigeria [6], Alnasser et al in Saudi Arabia. Road traffic injuries were the most common type of injury in this study population. The finding is consistent with studies done in Nigeria, sub-Saharan Africa where road transport accident is the major cause of trauma in young adults and children, falls and burns are also a common cause of injury in children. Other forms of injuries from domestic animals and bicycle handle injuries are rare in this environment compared to other previous studies in Zaria Northern Nigeria [7]. This may be due to the fact that few of our children are involved in recreational activities like bicycle riding competitions. [7] The consequences of these trauma injuries can be severe and may lead to permanent disabilities and subsequently, act as a more economic and personal burden on society [9]. Fifty percent of

trauma occurred in the 6-10 age group as shown in Table 1. This finding is similar to a report by Lukong and co-workers in North-western Nigeria. The reason is that children in this age group are exploring their environment with little supervision. [10] The means of transportation to school are motor cycle and tricycle carrying more passengers making them prone to road crashes in this sub-region. The accidents were commoner in the night as a result of poor visibility due to lack of street light and most vehicles have poor lighting systems which may further compound the visibility problems. [11]

Pain was a cardinal and prominent symptom in the study and should always be addressed during resuscitation. Abdominal pain, chest pain and skeletal pain characterized injuries involving this region. Blunt abdominal injury is marked in children when compared to penetrating abdominal injuries. [12]

Lacerations were the major injuries noted in our study (see table 4). These lacerations were followed by limb fractures, head injury and burns. The finding in this study is consistent with findings reported by Lukong and co-workers in North-western Nigeria but at variance from studies from the developed world where other forms of injury predominate. [13]

Injury prevention strategies should be supported by successful interventions that include environmental changes, engineering, enforcement of legislation, and education (known as the four E's). [14] Environmental changes are designed to reduce risk of injury; an example is well-designed roads, which can reduce the risk of head-on collisions. Engineering changes include the design of vehicles with air bags and antilock brake systems that reduce the risk of injury. Enforcement of laws requiring the nonuse of alcoholic drinks while driving, the use of seat belts for all occupants of a vehicle, and the observance of speed limits will reduce the incidence of road traffic injuries. A broad-based safety education campaign involving adults, children, and stakeholders (and supported by governments and nongovernmental organisations, or NGOs) will produce a safer environment for children. [15]

The mortality was 30(10%) compares favourably to some the best centres managing emergencies in the industrialized nations [16]. The breakdown of mortality showed; head injury 15(5%), poly-traumatized 5(1.6%), chest injury 2(0.6%), burns 3(1%). Polytrauma may designate severe injury and this might explain the reason for the mortality in this group of patients

## 5. Conclusion

There is rising incidence of childhood trauma in our sub-region with varying causes. The result in this series shows good outcome in children managed for trauma in our centre. There may be need for more staff training, procurement of equipment and the establishment of paediatric trauma centres

in the various sub-regions in this country. This will help in reducing morbidity and mortality.

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