

**FRACTURE PATTERNS AS SEEN AT THE ACCIDENT AND EMERGENCY  
DEPARTMENT OF THE UNIVERSITY OF MAIDUGURI TEACHING HOSPITAL  
NIGERIA: - A FIVE YEAR PROSPECTIVE STUDY**

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**ABSTRACT**

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**Background:** Most trauma resulting from vehicular accidents or otherwise, often involve the skeleton (made up of 206 bones), resulting into a fracture. Fractures are a cause of high morbidity and occasionally mortality.

**Objective:** The aim of this study is to analyze the anatomical regions most involved, fracture types, their causes, outcome of treatment and the commonest complication of the fracture in our environment.

**Method:** A five year prospective study (January 2005 to December 2009) was undertaken. All patients presented at the Accident and Emergency Unit of the University of Maiduguri Teaching Hospital, both fresh and old fractures were included. All were followed up to discharge from the hospital and some years after. Those that died were noted. A proforma was used to collect the data. Follow up was between 2 to 5 years.

**Results:** During the period of the study, there were 24, 041 emergencies that reported to UMTH, 6,535(27.2%) were due to RTA and 596 (2.5%) had fractures, presenting with 677 fractures. There were 477(80.2%) males and 189(19.8%) females, giving a ratio of 4:1. The lower limbs were affected in 247(41.5%) patients, upper limbs in 146(24.6%), more than one region 54(9.1%), maxillofacial 47(7.9%), skull 41(6.9%), spinal fractures 33(5.5%) and pelvic fractures 28(4.7%). There were 435(73.2%) motor vehicular cases, (3.4%) follows domestic accidents and 11(1.9%) from assaults. There were 66 associated injuries.

**Conclusion:** Fractures occurred in about 10% of RTAs with males more involved than Females (4:1) and motor vehicular accidents causing most of the fractures. The lower limbs were more involved and most of the fractures were closed. Association with head injury leads to more mortality

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**Keywords:** Emergencies, Fracture, Anatomical regions, Outcome of treatment, Associated injuries.

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**INTRODUCTION**

The management of trauma at any level of medical care involves adequate and proper planning. This requires data as to the causes of trauma and the injuries resulting from them.

Trauma can result in a form of fractures that can carry high morbidity and mortality if not properly attended to. Correct information on the pattern of fractures is therefore important to prevent or reduce these. This will also allow

hospitals to allocate available resources to the treatment of these injuries. The need for a category of personnel will also be justified if data is available. This study intends to get data for UMTH and its environs on pattern of fracture so that there will be a better planning to handle these cases, since no data exists hitherto.

#### METHODS

All patients arriving at the Accident and Emergency Department, (AED) of the University of Maiduguri Teaching Hospital from January 2005 to December 2009 form the subjects of the study. Particularly, interest was placed on those with fractures, both new and old. A daily statistic was taken from the AED admission and discharge registers, noting the names, ages, sexes, occupation, types and causes of fractures, associated injuries, and treatment given at the AED, while those admitted to the ward were followed until they

were discharged. Those that died in the AED or the wards were also noted. This was possible because the Author was involved in the managing of up to 90% of trauma cases that sustained fractures during the period of the study. He also had access to the patients of his colleagues. Patients with fractures were attended to by the Orthopaedic teams alone and those with associated injuries were managed alongside appropriate units. The outcome of each case was noted until patient was discharged from Accident and Emergency, ward, or died. Ethical Committee clearance was obtained from the Ethical Committee of the UMTH.

#### RESULTS:

More men presented to the hospital with fractures compared to women as shown in table 1 below.

**Table 1:** Sex distribution of the study population

S/No	Sex	Number	Percentage
1	Males	477	80.2
2	Females	119	19.8
	<b>Total</b>	<b>596</b>	<b>100%</b>

The study also revealed that 263 (44.1%) were traders, 87 (14.5%) were students, 81 (13.6%) were children, 56 (9.5%) house wives, 48 (8.1%) civil servants, 41(6.9%) farmers. Others were Police 6 (1%), Pensioners (0.8%), Soldiers 4 (0.7%), the Clergy 2 (0.3%), Unknown 2 (0.3%) and Doctors 1 (0.2%). This is shown in table 2 below.

**Table 2:** Occupation of the study population

S/No	Occupation	Number of	Percentage
1	Traders	263	44.1
2	Students	87	14.5
3	Children	81	13.6
4	House wives	56	9.5
5	Civil servants	48	8.1
6	Farmers	41	6.9
7	Police	6	1.0
8	Pensioners	5	0.8
9	Soldiers	4	0.7
10	Clergy	2	0.3
11	Unknown	2	0.3
12	Doctors	1	0.2
	<b>Total</b>	<b>596</b>	<b>100</b>

The study revealed that the bones of the extremities were more involved compared to the bones of the torso, the spine being the least involved. Some of the patients presented with more than one fracture as shown in table 3 below.

**Table 3:** Individual Bone involvement in the fracture

S/N	Bone involved	Number of Pts	Percentage
1	Rt. femur	78	11.5
2	Bilateral tibia/fibula	68	10.0
3	Lt. femur	64	9.5
4	Multiple	54	8.0
5	Pelvis	44	6.5
6	Skull	41	6.1
7	Thoracic spine	37	5.5
8	Ribs	37	5.5
9	Lt. tibia	35	5.2
10	Rt. radius	30	4.4
11	Lt. clavicle	26	3.8
12	Rt. foot	26	3.8
13	Rt. hand	23	3.4
14	Maxilla	19	2.8
15	Rt. tibia	17	2.5
16	Rt. foot	16	2.4
17	Rt.ulna	14	2.1
18	Rt. clavicle	14	2.1
19	Lumbar spine	8	1.2
20	Bilateral Femur	6	0.9
21	Colle's fracture Rt.	5	0.7
22	Colle's fracture Lt.	3	0.4
23	Scapular	3	0.4
24	Rt. patella	5	0.7
25	Lt. patella	4	0.6
	<b>Total</b>	<b>677</b>	<b>100%</b>

Table 4 shows the causes of the fracture in this study. Motor vehicular accidents accounted for 435 (73%) of the fracture, followed by motor cycles 60 (10.1%). Assault and industrial accidents accounted for the lowest. This is shown in table 4 below.

**Table 4:** Cause of fracture in the study group

S/No	Cause of fracture	Number of	Percentage
1	Motor vehicles	435	73.0
2	Motor cycles	60	10.1
3	Gun shot	36	6.0
4	Domestic	20	3.4
5	Fall from height	15	2.5
6	Pathological	15	2.5
7	Assault	14	2.3
8	Industrial	1	0.2
	<b>Total</b>	<b>596</b>	<b>100</b>

Most of the patients, 516 (86.6%) did well and were discharged home. 55 (9.2%) left against medical advice and only 25 patients (18 males and 7 females) accounting for 4.2% died. This is shown in table 5 below.

**Table 5:** Outcome of treatment of the study population

S/No	Outcome	Number of	Percentage
1	Discharged well	516	86.6
2	Left against medical advice (LAMA)	55	9.2
3	Died	25, (18 males, 7 females)	4.2
	<b>TOTAL</b>	<b>596</b>	<b>100</b>

## DISCUSSION

When a person is in motion or on a vehicle, the body is propelled by kinetic energy, the amount of which is proportional to the speed of the vehicle. On sudden impact, there is conversion of this energy to potential energy; this is usually associated with injury to the musculoskeletal system often resulting in the fracture of a bone. The degree of damage to the bone is proportional to the force of impact and therefore the energy involved. When a moving object hits the musculoskeletal system e.g. car, bullet etc, and the same conversion takes place resulting in a similar effect. The most vulnerable parts of the body to be injured are the extremities and as shown in this study, the lower extremities are more involved.<sup>1</sup> Most of

these however, are not fatal,<sup>2</sup> the middle aged being more prone,<sup>3</sup> the face was usually least affected<sup>4</sup> and usually non-fatal. The face was usually least affected<sup>4</sup> and usually non-fatal. When some vital organs or organ system are involved, mortality becomes higher. These include head and chest injuries.<sup>5,6</sup>

Motor vehicular accidents do happen when drivers do not obey traffic rules, vehicles are poorly maintained, or when the roads are bad. Most accidents do happen due to human errors largely, and to some extent bad road maintenance by government.

These movements are commerce related in most cases, involving breadwinners of the

families. These families usually experience some distress and a timely treatment of these patients is important. We also discovered that prompt attention need to be given to these injuries to reduce the mortality and morbidity rates. Those that report later or who have attended to traditional bonesetters did have complications, some of which lead to amputations or even death.

We also observed that Specialist Care for patients with fractures are only available in Teaching Hospitals and some Federal Medical Centre due to the few number of trauma surgeons available in our sub region. Most patients therefore resort to traditional methods that usually fail and end up in these centres,<sup>7</sup> with attendant complications. Sometimes, some leave these centres to attend the traditional bonesetters (TBS), only to come back months or years later with complications.

## CONCLUSION

Fractures associated with vehicular movement of people on our roads remains a significant problem in our environment, with motor vehicles accounting for most injuries. Our roads should be standardized and drivers made to obey all traffic laws, including good maintenance of their vehicles. We also need more specialists in trauma management and government should improve on the existing health facilities available, creating more where possible. The public should also be educated on the need to attend these facilities on time when they have fractures. Regional Neurosurgical centres will be a good thing.

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**Conflict of interest:** We declare that there is no conflict of interest.

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