

# Pattern Of Fractures And Dislocations In A Tertiary Hospital In North – East India

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## Citation

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## Abstract

**Background :** Trauma represents a major epidemic of non-communicable diseases in the present century . The aim of this study was to determine the pattern and epidemiological characteristics of fractures and dislocations presented to Regional Institute of Medical Sciences, Imphal, India

**Methods :** This was a retrospective review of the hospital charts of all the patients presented to emergency and accident unit of this hospital between November 2008 to October 2010. Data was subjected to simple statistical analysis.

**Results :** There were 4041 cases with fractures and /or dislocations presented during the study period . There were 2612 males and 1429 females. The male to female ratio was 1.82:1. Most common age group involved was fourth decade followed by third decade. Road traffic accidents (RTA) accounted for 62 % of all cases. Upper limb fractures were more common than lower limb fractures. Most common dislocations presented were shoulder dislocation.

**Conclusion:** Most of the causes of fractures and dislocation are preventable. Knowledge of the pattern of fractures and dislocation will be helpful in planning better management in trauma centres.

## INTRODUCTION

Trauma represents a major epidemic of non – communicable disease in present's era. They are no longer considered accidental but are part of the price we pay for technological progress. Trauma has its own natural history and follow the same epidemic pattern as any other disease ; that is agent, host, the environment interacting together to produce injury or damage. It occurs more frequently in certain age group, at certain times of day and week and at certain localities.

Among the total disability adjusted life (DALY) , 13% were due to injuries. Injury as a research problem has also been largely ignored in developing countries.<sup>1,2</sup> The burden of trauma worldwide is disproportionately concentrated in lower- income countries. The world health organization anticipates that, if current trends continue, road traffic injuries, interpersonal violence and self –inflicted injuries will all be among the leading 15 causes of disability – adjusted life years lost by the year 2020. Road traffic crashes, which in 1990 ranked as the ninth leading cause of disability – adjusted life years lost, is predicted to reach the rank of three in 2020.<sup>3</sup>

Fractures may occur under a variety of clinical circumstances. Most commonly, a fracture is the result of a large force acting acutely on an otherwise normal bone, and

disrupting the normal bony architecture. According to the 1996 world Health organization report (WHO), injury ranks fifth among all causes of death and accounting for 5.2% of all mortality worlds wide .<sup>4</sup> It is a leading cause of death and disability for people under 45 years in the industrialized world .<sup>5,6</sup> These rates are declining in developed countries but injuries are important and a largely neglected health problem in developing countries.<sup>7</sup>

Road traffic accidents continue to be a problem of immense proportions in many places in worldwide. It is a leading cause of all trauma admissions in the hospitals worldwide. Regional institute of medical sciences (RIMS) is located in Imphal, capital of Manipur. The institute hospital serves as a referral center to a large area of Manipur state and some neighbouring states of North east India. Very few studies have been carried out in relation to trauma in north east India especially in Manipur state. This study is done to study of pattern of fractures and dislocations among the trauma cases presenting to RIMS casualty.

## MATERIAL AND METHODS

A retrospective study was designed with the objective of analysing the data on trauma available in the orthopaedics wing of casualty of RIMS hospital, Imphal. We aimed to evaluate the pattern of fractures and dislocations presenting

to accident and trauma unit of this hospital .  
 A proforma was designed to document all the relevant data. Ethical clearance was obtained from concerned authority. The study design was a retrospective descriptive study involving all patients fulfilling the inclusion criterion who presented to accident and emergency unit from November 2008 to October 2010. All patients irrespective of age and sex were included in the study. Patients sustaining head injury, only soft tissue injury and fracture of ribs were excluded from the study. The cases notes were retrieved and reviewed. The information extracted included patient’s age, sex, mode of injury, pattern of fracture and dislocation. The data so obtained was compiled and subjected to simple statistical analysis.

**RESULTS**

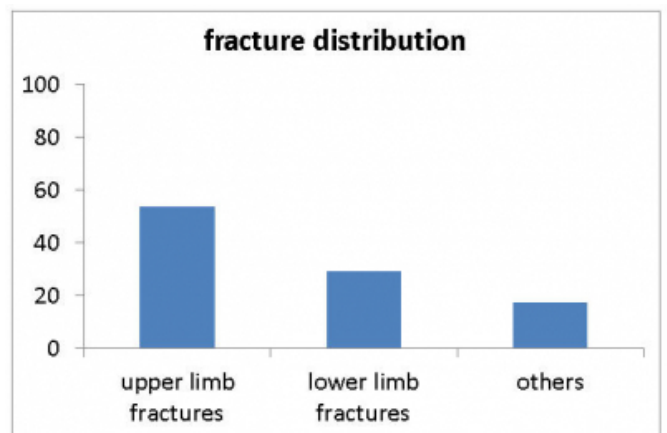
A total of 4041 patients were presented to casualty with fractures and dislocations within the study period. There were 2612 males and 1429 females with male to female ratio 1.82:1. Multiple fractures and combined fracture/ dislocation were observed in some patients. In our study, we found that most patients were in the age group of 31- 40 (24%) followed by 21-30 (20%) and 31-40 (18%). The pattern of fractures and dislocation is shown in table 1 and table 2 respectively.

**Table 1**

Table 1 shows the frequency of involvement of bones in fractures. Fractures of radius and / ulna topped the list with 39%. It was followed by fracture of the tibia. The radius topped the list affecting 30% of all fractures (alone or with ulna) followed by fracture of the ulna (alone or with radius) 23%. Tibial fractures account for 23.20% (alone or with fibula). Fracture femur contributed to 6.6% of all fractures. The patella was the least affected bone with 2.8 %.

Bone	No	%
Radius and ulna	650	16.1
Tibia and fibula	578	14.3
Radius only	569	14.1
Humerus	420	10.4
Ulna only	378	9.4
Tibia only	324	8.0
Femur	226	5.6
Hand	266	6.6
Spine	226	5.6
Foot	113	2.8
Pelvis	130	3.3
Fibula only	84	2.0
Patella	73	1.8
Total	4041	100

**Figure 1**  
Fracture distribution



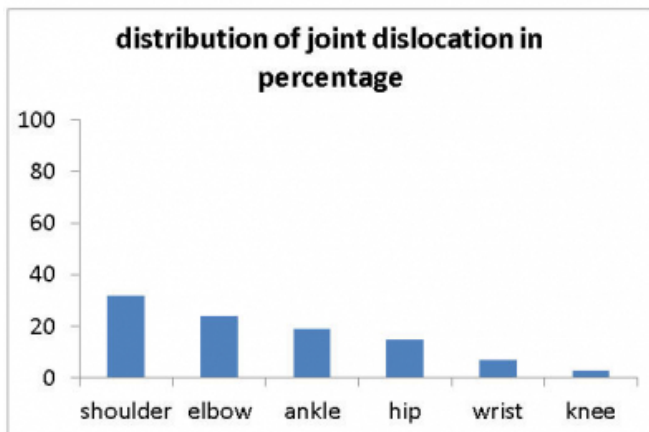
**Table 2**

Table 2 shows the frequency of fracture/dislocation involving the various joints of the body. The shoulder dislocation is the most affected joint accounting for 32% of the cases followed by elbow and hip respectively.

Joint	No.	%
Shoulder	88	32
Elbow	66	24
Ankle	52	19
Hip	41	15
Wrist	19	7
Knee	8	3
Total	274	100

**Figure 2**

Distribution of joint dislocation



In the etiology of fractures, RTA was the most common accounting for 62% which included (skid and fall involving two – wheelers , hit by two/three wheelers to pedestrians, collisions with other two/three wheelers or with four wheelers or with stationary objects and overturning of three or four wheelers). It was followed by fall from height (26% ) which included ( fall from trees, fall from high terrain or fall from roof of wooden houses in hilly areas while climbing wooden stairs), assault 2% , gun shot 1.8 % and domestic violence 2%

**DISCUSSION**

The most common age group involved in our study group is the fourth decade followed by the third decade. These two age groups accounted 44% of all trauma victims. This shows that the people of the most active and productive age group

are involved in the trauma, which adds a serious economic loss to the community. Jha N et al<sup>8</sup> in their study of injury pattern among road traffic accident cases in a tertiary hospital in south India found that more than 53% of the victims were in the age group between 20 – 40 years . The male to female ratio in this study was 1.8:1. Akinpelu O V et al<sup>9</sup> in their study of road traffic accidents in Nigerian tertiary hospital observed that total of 47.3% trauma admissions were in the third and fourth decade of life , with mean age as 32 years . The male o female ratio was 2.5:1 . Swarnkar M et al<sup>10</sup> in their study of trauma in central india observed that the male to female ratio was 3.9:1.Okaro IO et al<sup>11</sup> in their study of anatomic pattern of fractures and dislocations among accident victims observed that the male to female ratio to be 1.8:1.

Among the causes of fractures, RTA contributed for 62 % followed by fall .<sup>10,11,12,13,14</sup>, This is explained by the fact that there has been tremendous increase in number of vehicles plying on the roads, contributed by the fact that roads are poorly maintained. Swarnkar M et al<sup>10</sup> found that RTA was was the commonest cause of injury (46.85%) followed by assault ( 27.42% ) and fall injuries (21.14%). Okoro IO et al<sup>11</sup> in their retrospective study of all patients with accidental fractures and dislocations in owerri , Nigeria observed that RTA was the major cause of all injuries accounting for 72% of all cases . Our study showed that upper limb fractures was more involved than lower limb . Similar observations were made in Shaheen MAE et al<sup>12</sup> which observed that upper limb injuries were more frequent than the lower limb and axial skeletal injuries and the radius and ulna was the most commonly fractured bone but different from some studies .<sup>13,14</sup>, This is explained from the fact that most of the trauma occurred in this region results due to low velocity RTA , thus enabling the victims to use defense mechanism , hence causing more upper limb fractures than lower limb fractures. Shoulder dislocation is the most common followed by elbow dislocation .Ebong WW et al<sup>15</sup> observed that dislocations were commonest at shoulder and elbow . Gun shots and assault also causes a significant amount of fractures.

**CONCLUSION**

This study shows that most of the causes of trauma are preventable but require good maintenance of roads. Road traffic accident account for maximum fracture presentation. Upper limb fracture are more common than lower limb fractures. In adults, radius is most commonly affected while both bone forearm fractures constituted highest number in children. Awareness campaigns concerning safety rules

targeted at the high risk group (adult males, students) will help in reducing the occurrence of RTAs. Knowledge of pattern of fracture and joint dislocation in this region will be helpful for hospital authorities in making better preparation in the hospital and trauma centres such as opening of 24 hour trauma Operation theatres so that long bone fractures can be fixed immediately, thus improving patient outcome and giving better health care services.

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