

# Epidemiology of Orthopaedics Fractures in Under- Developed Country Due to Trauma, A Retrospective Study

Usman Nazir Gill

## ABSTRACT

**Objective:** To point out the factors leading to fractures, pattern of musculoskeletal fractures, keeping in view the age and sex of patients.

**Methods:** In this study 740 patients admitted in orthopedic causality were included during July 2014 to December 2014. Their record was obtained from the admission files. Microsoft Excel was used to perform calculations and organize the data.

**Results:** Out of 740 patients, 414 patients (56%) had road traffic accidents. Femur was the commonest bone that suffered fracture 281 (38%), and then was Tibia 185 (25%). In upper limb Radius and Ulna fractures 118 (16%) were more common than Humerus 67 (9%). 540 patients (73%) had closed fractures while 200 patients (27%) had open fracture. Mean age of patients suffering road traffic accidents was 28 years, but in case of patients suffering fall, the mean age was 65 years. Male to female ratio was 3:1. Majority of patients 636 (86%) were riding motorcycle at the time of accident.

**Keywords:** Open fracture, Road traffic accidents, fall, and Firearm injury.

## INTRODUCTION

Road traffic injuries (RTIs) are the neglected epidemic of the developing world. Road traffic injures (RTIs) are responsible for a substantial proportion of deaths and injuries and are responsible for more years of life lost than most human diseases. Human behavior factors, vehicle factors, and road factors contribute to the causation of road traffic crushes [1]

There is a decrease in the number of accidents in developed countries in recent years [2]. This downward trend is because of improvement of roads, motor vehicles, rules and regulations. On the other hand, the number of accidents and casualties are on rise in the developing and under developed countries. Interestingly more than half of all the deaths due to road traffic accidents occurs in South East Asia and Western Pacific regions of World Health Organization [3]. Apart from the injuries and mortalities, road traffic accidents adversely affected the economy of the country, which is 1% to 1.5% of Gross National Product (GNP) of low to middle income countries [4]. Mostly the victims of accidents are male and according to a

study in USA, 58.2% were between ages of 15 to 55 years old [5]. Several factors are responsible for road accidents like vehicles, condition of roads, and human behavior [6]. Also simple precautions can save ones life. For instant, 53% of the death after motorcycle accidents was because of head trauma in USA [7]. On the other hand, wearing helmet while riding motorcycle reduces the chances of head trauma by 72% [8]. In developing countries, the data that is available regarding road traffic accident is either insufficient or of poor quality, making the problem worse [9]. The death rate in Pakistan due to road traffic accidents is 15.5 per 100,000, which is significantly higher, according to World Health Organization (WHO). Despite such a high number of casualties there is still a limited epidemiological data available. According to a study conducted in India, fractures were the commonest injury among the victims of nonfatal road traffic accidents [10].

## METHODS

This is a retrospective study. The patients in this study attended the Orthopedics accident and emergency department of Lahore General Hospital from July 2014 till the end of December, 2014. Their record was obtained from the admission files. Excel spreadsheet was used to perform calculations and organize the data of patient's age, sex, date of admission, mode of injury,

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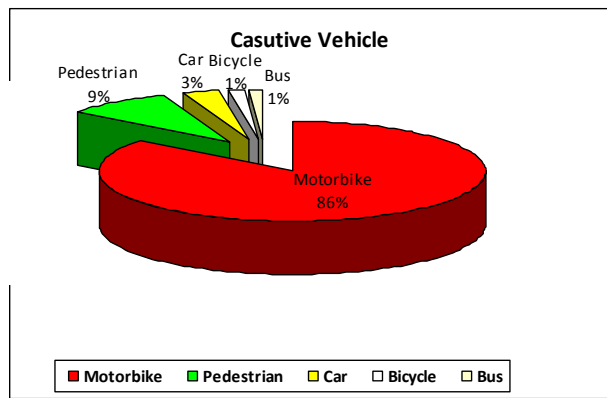
*Department of Orthopedics, Lahore General Hospital*  
 Correspondence: Dr. Usman Nazir Gill  
 Email: [usmangill6949@gmail.com](mailto:usmangill6949@gmail.com)

pattern of fracture. Data was analyzed using Descriptive statistics.

**RESULTS**

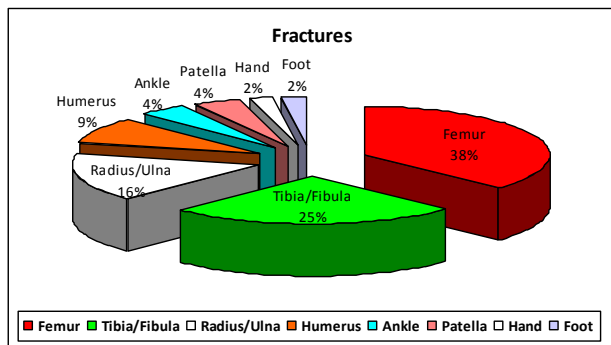
Out of 740 patients, 577 patients were male (78%) and 163 patients were female (22%). Majority of patients were young adults with mean age of 34 years.

As far as age was concerned, road traffic accident was common among 20 and 40 years age group. In 636 patients (86%), motorbike was the cause of accidents. After this, 68 patients (9%) were pedestrians who were struck by vehicles. Interestingly, majority of patient were either younger than 20 years of age or older than 50 years of age, showing bimodal variation. 22 patients (3%) had car accidents and majority of them had multiple fractures.

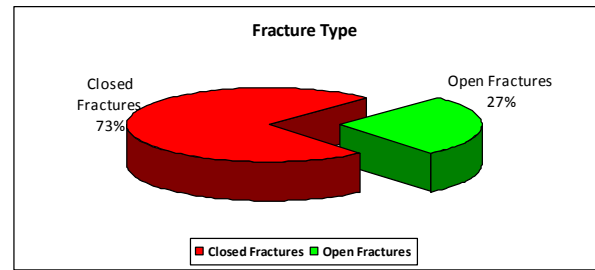


**Fig 1:** Causative Vehicle

History of fall was common in patients above 50 years. As a result of fall, hip fracture was commonly seen, with 407(55%) involving inter-trochanteric region of femur. Occupational hazard in the form of traumatic machinery injury though rare but was common in young adults, with fractures involving dominant hand in most cases.



**Fig 2:** Incidence of various bones involved



**Fig 3:** Type of fracture

540 patients had closed fractures (73%). 541 patients suffered fracture of lower limb (73.2%) as compared to 199 patients with upper limb involvement (26.8%). 283 patients suffered the fractures involving Femur (38%), followed by Tibia (25%). In upper limb fracture of Radius/ Ulna accounts for 118(16%) of all the fracture followed by Humerus 67 (9%). 14 (2%) patients had fractures of hand involving Metacarpals commonly.

**DISCUSSION**

Road traffic injuries (RTIs) are the neglected epidemic of the developing world. They are the leading cause of death in person’s aged 15–29, affect people in their prime productive years, and can cause long-term disability. RTIs are on the increase in much of the world, and generalized economic and population growth ensure that this trend will continue for the foreseeable future [11].

An international evaluation of the Global Burden of Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010), identifying all available data on causes of death for 187 countries from 1980 to 2010, showed that the fraction of global deaths due to injuries was marginally higher in 2010 (9.6%) compared with two decades earlier (8.8%). This was driven by a 46% rise in worldwide deaths due to road traffic accidents and a rise in deaths from falls [1]

In patients with traumatic fracture, male to female ratio was 3:1, which is higher when compared to developed countries like Norway where male to female ratio is 2:1 [12]. This is because men usually drive cars and ride motorbikes, whereas, women usually stay indoors. Male in our society are more reckless, adventurous and careless on roads. Majority of accidents involve motorbike (86%) but in United Kingdom, in the year 2012, 19% of accidents involved motorbikes. This is because strict rules and regulations in United Kingdom, riders wear helmet and motorbikes make only 1 % of all the traffic which is not the case in

our society. Wearing helmet and other protective gear can reduce the incidence of fractures in motorbike accident. Pedestrians suffering road traffic accident had two extremities of ages, and this is because of poor peripheral vision, decreased hearing and slower reflexes in elders, while in children, it is carelessness and lack of appreciation of speed and distance of approaching vehicles. There is a seasonal variation regarding traumatic fracture by fall. There is an increase in the number of patients, suffering from fracture of Radius and Ulna because of fall from Mango and Jamun trees during the months of June and July. It is also noted that simple fall can result in femoral fracture in elders because of osteoporosis. Femur is most commonly involved in traumatic fracture 38%. Machinery injury commonly involve Metacarpals and Phalanges of dominant hand (14 patients), showing lack of protective gears for the factory workers.

## **CONCLUSION**

By compiling the data, we have a better understanding regarding the trends that lead to traumatic fractures in our society and we can chalk out some strategies to avoid such incidents and manage such patients. Organizing road safety awareness programs at school and higher levels and strictly implementing traffic rules and regulations by officials can decrease the number of road traffic accidents. This will help to decrease the burden and early rehabilitation of patients.

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