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## Evaluation of Injuries Patterns at A Medical College Hospital of Central India.

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### ABSTRACT

In the recent era of trauma, about one million people get seriously injured annually. Majority of them suffer from lower limb injuries. Due to lack of trauma registry in India, prediction models are not much effective. The aim of our study was to derive basic pattern for lower limb injuries which can be used to develop better prediction models to reduce morbidities and mortalities. We conducted an observational study on isolated lower limb injuries without any musculoskeletal disorder at a Medical College Hospital in Akola, Maharashtra between January 2012 to December 2013. The lower limb injuries were classified as per the Limb Salvage Index score (LSI) for further management. A total of 1160 patient were included. Mean age was 44.5 years and 75 percent of them were males. Lower limb injuries showed bi-modal age group with first peak between 30 to 40 years and second at 60 to 70 years. Road traffic accidents were the most common cause of injury followed by fall at home. 1.8 percent patients had Limb Salvage Index ranging between 7 to 12 and underwent amputations. Both lower limbs were almost equally affected with left showing a little higher value than right (49 versus 47 percent, p>0.05). Femur was the most commonly affected bone. This study helped us in identifying certain characteristics that may be useful for planning preventive strategies in an attempt to reduce the numbers of accidents and redirect public investment in health.

**Keywords:** Medical College Hospital, Injury pattern, Limbs, LSI, Trauma

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## INTRODUCTION

According to the recent WHO report, trauma would be the third largest killer in developing countries by 2020 [1,2].

Worldwide about 3000 people die every day and 30,000 are injured seriously in traffic accidents. Developing countries like India have a DALY score and a major contribution to this is made by trauma which affects both; quality of life (QOL) and the years of life lost (YLL).

Trauma accounts for about 12 percent of all causes of death worldwide. Being a significant cause for the lower limb amputations in population less than 50 years; it affects the individual and the society. Getting back into life after amputation comes with many problems. Due to failure to comply with new conditions these people may suffer from psycho-social difficulties like depression, sense of hopelessness, low self esteem, boredom, anxiety, frustration, fear of family future, which sometimes leads them to commit suicide. In developing countries like India, a majority of such injuries occurs in the poor strata of the society.

Trauma epidemiology is essential to describe the morbidity, disability and dependency as well as defining the most important target for prevention regarding the severity of injury. The prevention of lower limb injuries is more important for developing nations like India for its economy. It has been previously shown that lower limb injuries constitute the majority in trauma and road traffic accidents [3].

Lower limb injury generally involves young and productive people so it is the prime responsibility of the society to prevent such incidents [4-7].

Hence, we decided to study the pattern of lower limb injury at our hospital.

## MATERIALS AND METHODS

In this observational study 1160 patients with lower limb injuries reporting to emergency department of our hospital from a period of January 2012 to December 2013 included were selected. The group was studied for lower limb injuries caused by road traffic accidents, fall from height, fall at home, farm accidents and sports injuries. Data survey included age, gender, location and type of trauma, injury mechanism, anatomical site of injury, initial outcomes and complications. The isolated lower limb injuries were analyzed as per the Limb Salvage Index (LSI) as suggested by Russel et al [8].

## RESULTS

Data were collected between January 2012 to December 2013, showing total of 1160 patients, who were victims of isolated lower limb injuries due to trauma. The

mean age of patients was 44.5 years (minimum 5 years and maximum 95 years) with majority being males.

The distribution of isolated lower limb injuries showed bimodal curves, one at 20-40 years and another at 61 to 70 years of age (Table 1). The majority of young population had fractures of shafts of long bones while inter-trochanteric and neck femur fractures were common in elderly population. A major proportion of this trauma occurred due to road traffic accidents as compared to other modes of injury ( 2.12:1) (Table 2). Fall from height, sports injuries and farm accidents were minor contributing events for the same.

**Table 1: Distribution of lower limb injuries**

<b>Age (Years)</b>	<b>Number of Patients</b>
<10	14
11-20	75
21-30	190
31-40	253
41-50	139
51-60	135
61-70	177
71-80	107
81-90	51
91-100	19

**Table 2: Mode of injury in patients with lower limb trauma**

<b>Mode of Injury</b>	<b>Percentage of Population</b>
Road Traffic Accidents	72
Fall from Height	6
Fall at Home	16
Sports Injury	2
Farm Accidents	4

The isolated lower limb injuries were classified as per the Limb Salvage Index (LSI) [8]. Out of 1160 patients we observed, about 51 (4.4%) had Distal Neuro Vascular Damage and a LSI ranging from 4 to 12. About 20 of them (4.4%) had LSI score 7 to 12 and underwent amputations.

**Table 3: Lower limb structures involved in isolated injuries. Femur constitutes the majority followed by Tibia**

<b>Structures involved</b>	<b>Percentage</b>
Acetabulum	3
Femur	44
Tibia	36
Fibula	3
Patella	3
Minisci	6
Tarsal	2
Metatarsal and Phalanges	3

Majority of the fractures due to lower limb injuries involved long bones like Femur (43%), Tibia (35%) and remaining were acetabular injuries (3%), patellar fractures, miniscal injuries and fractures of tarsal and metatarsals of lower limbs (Table-3). Tarsals were involved in about two percent of our study population which correlates with others [9]. Sports injuries were not very common and only 2% of our patients presented with them. Though majority of the road traffic accidents involved tibia and femoral shaft fractures, inter-trochantric fractures were common in elderly females falling at home. Calcaneal fractures due to fall from height consisted of about 2% of the cases and metatarsal and phalyngeal fractures were about 4% of the reported patients (Table 3).

## DISCUSSION

An increase in motor vehicular accidents due to rapid development of roadways and infrastructure. This has resulted in increased amount of trauma, especially to the lower limbs. As shown by Monk et al, lower limb injuries constitute the majority in trauma incidents [10]. Males were affected thrice more often than females in this study (2.9:1). One of the reasons being that the road traffic accidents have been found to be the major contributor to isolated lower limb injuries. It is a general observation that road traffic accidents involve males more than females in the developing world. The demographic findings in this study resemble that of an urban area in western world with trauma patients being mainly males in their early forties or late thirties [11]. A study recently revealed an 18% increased rate of injury amongst patients older than 65 years, which correlates with our findings [12]. Interestingly, at 72 %, our hospital sees a higher rate of road traffic accident related trauma, which is much higher than western world (33% for United Kingdom [11] and 35 % for United States [13].

## CONCLUSION

According to the mapping of the profile of individuals involving lower limb injury at the emergency department of at our hospital, it was possible to identify some characteristics that may be useful for planning prevention strategies such as the development of protection mechanisms for lower limbs, stimulating the enforcement regarding the compliance of traffic laws by drivers, awareness of safety measures in an attempt to reduce the numbers of accidents and redirect public investment in health.

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