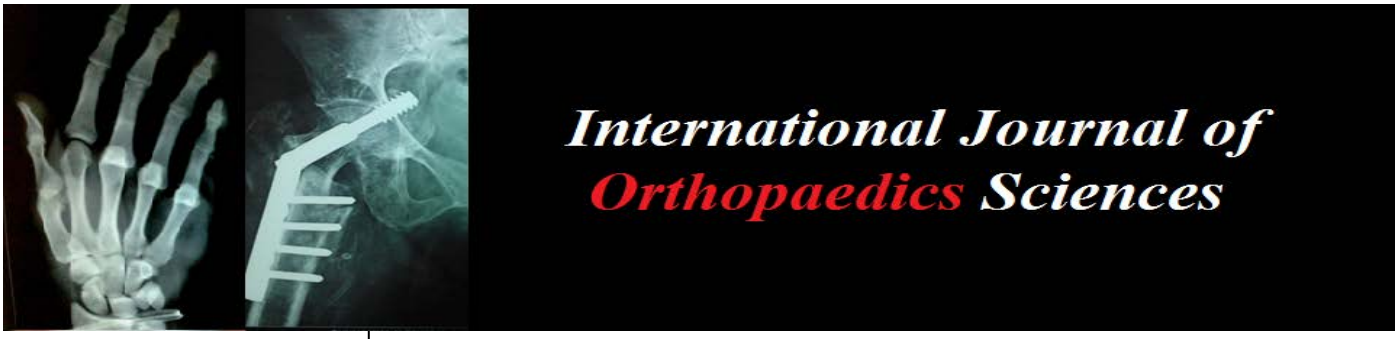

ISSN: 2395-1958
IJOS 2017; 3(1): 93-96

www.orthopaper.com
Received: 17-11-2016
Accepted: 19-12-2016

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Pattern of Orthopaedic injuries among patients attending the emergency Department in a medical college hospital

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DOI: http://dx.doi.org/10.22271/ortho.2017.v3.i1b.17

Abstract
Introduction: This study was aimed at analyzing the pattern of Orthopaedic injuries among patients attending the Emergency department. Retrospective study was conducted in the Department of Orthopaedics, Mandya Institute of Medical Sciences.
Methods: The record analysis of injured patients seen at the emergency department over a 12 months period from September 2015 to August 2016 was done. The data was analyzed with special reference to the pattern of Orthopaedic injuries.
Results: During the 12 months study period, 1753 injured patients were seen in the emergency department. Out of these the maximum (n=1232, 70.27 percent) were in the age group of 11-45 years. There were 1286 males (73.35 percent) and 467 (26.64 percent) females patients. Road traffic accident was the most common cause of injuries being responsible for 61.03 percent (n=1070) of patient injuries. Other causes were fall from height in 302 cases (17.22%), fall from bed in 28 cases (1.59%) fall from stairs in 45 cases (2.56%), fall on ground in 72 cases (4.10%), occupational injuries in 65 cases (3.70%), assault in 161 cases (9.18%) and sports related in 10 cases (0.57%).
Conclusion: Fractures were the most common pattern of Orthopaedic injuries, frequently associated with head injuries. Research in to appropriate strategies for prevention of injuries, especially RTA is required in tertiary care hospitals.

Keywords: Fracture, Orthopaedic injuries, Road traffic accidents

1. Introduction
Road traffic injuries contribute significantly to the burden of disease and mortality throughout the world, but particularly in developing countries [1-3]. Motorcycle related trauma is and remains a major cause of morbidity and mortality in those of productive age in developing world [4]. Injuries and death from road traffic crash are expected to increase if no preventive measures are made [5]. Formally road traffic injuries were the leading cause of permanent disability and mortality among those in productive age in developed countries but currently the developing countries are also faced by a similar challenge as they undergo what has been termed as the "epidemiology of transition" [6]. The majority of those injured in road traffic crashes in developing countries are pedestrians, cyclists and motorized two-wheel riders [2]. While the population groups exposed to the highest risks of injury and death from road traffic crashes are those from lower socioeconomic groups [7, 8].
The Accident and Emergency services are one of the mainstays in the medical care offered by the present day hospitals. Emergency Care should be of high quality, cost effective and compassionate. Currently Road traffic injuries are ranked ninth globally among the leading causes of disability adjusted life years lost. It has been predicted that by 2020, they will rank as high as third among causes of disability adjusted life years (DALYs) lost [5]. Worldwide it is estimated that, 1.2 million people are killed in road crashes each year and as many as 50 million are injured [9]. With increasing modernization in many developing countries, road traffic deaths are increasing and traffic deaths are projected to become the third most important health problem by 2020 [10-12]. The morbidity and mortality burden in developing countries is rising due to a combination of factors, including rapid motorisation, poor road and traffic infrastructure as well as the behavior of road users [13].

The world health organization's world health day for 2004 was dedicated to road safety [14]. This level of attention to road safety underscores the global burden of road traffic injuries and the need for public health concerned towards reducing this epidemic. Orthopaedics ward admissions range from relatively healthy patients admitted for deformity corrections to those with simple fractures, polytrauma and chronic illnesses. These cover a whole spectrum of ages and added medical co-morbidities. Hence this study is designed retrospectively to identify the characteristics of Orthopaedic injuries seen in the Mandya Institute of Medical Sciences and identify potential areas of development to enhance trauma research an important adjunct to effective policy formulation and implementation.

2. Methods

This was a retrospective study conducted at the Emergency department of Mandya Institute of Medical Sciences, Mandya, Karnataka, India. The patients attending the emergency department of Mandya Institute of Medical Sciences with orthopaedic injuries and with complete data during September 2015 to august 2016 were included in this study. Patients with incomplete data were excluded from the study. Personal data and pattern of injuries sustained were extracted from the case records, casualty admission register. Data extraction was manually done by reviewing each case file. Data collected was analyzed using simple statistical method of percentages.

3. Results

During the 12 months study period, 1753 injured patients were seen in the emergency department. Out of these the maximum (n=1232, 70.27 percent) were in the age group of 11-45 years. There were 1286 males (73.35 percent) and 467 (26.64 percent) females patients. Road traffic accident was the most common cause of injuries being responsible for 61.03 percent (n=1070) of patient injuries. Other causes were fall from height in 302 cases (17.22%), fall from bed in 28 cases (1.59%) fall from stairs in 45 cases (2.56%), fall on ground in 72 cases (4.10%), occupational injuries in 65 cases (3.70%), assault in 161 cases (9.18%) and sports related in 10 cases (0.57%) (Table-1)

Study revealed that the commonest injury was a fracture (67.02 percent, n=1175) and the most common site was lower limbs in 56.51 percent cases (n=664) with the tibia/fibula being the most common bones to be fractured. Next common site was upper limbs (29.87 percent, n=351) followed by pelvic fractures (8.0 percent, n=94), spine fractures (3.48 percent, n=41), and rib fractures (2.12 percent, n=25). There were 72.68 percent cases (n=854) of simple fractures and 27.31 percent cases (n=321) of compound fractures. Single bone fracture was present in 32.85 percent cases (n=386), two bone fractures were present in 41.27 percent cases (n=485) and multiple fractures were seen in 25.87 percent (n=304) (Table-2). There were 3.82 percent cases (n=67) of various dislocation, shoulder dislocation being the most common. Crush injury was seen in 4.16 percent cases (n=73). The sprain and strain of ligaments and muscles were present in 8.44 percent cases (n=148) only laceration was present in 8.78 percent cases (n=154), contusion with intact skin were present in 7.75 percent case (n=136) (Table-3). Right side of the body was involved 41.75% cases followed by left 25.72% cases and bilateral involvement seen in 30.17% and axial skeleton involvement in 3.48% cases. Most commonly associated visceral injury was the head injury in 18.31 percent cases (n=321). Pelvic and genitourinary injuries in 0.96% cases (n=17), thoracic injuries in 1.99% cases (n=35), abdominal injuries were present in 3.02% cases (n=53) and no visceral injuries were found in 75.69% cases (n=1327) (Table-4).

Table 1: Mode of injury

Etiology	Number (%)
RTA	1070(61.03)
Falls	447(25.49)
Fall from height	302(17.22)
Fall from bed	28(1.59)
Fall from stairs	45(2.56)
Fall on ground	72(4.10)
Occupational injury	65(3.70)
Sports injury	10(0.57)
Assault	161(9.18)

Table 2: Distribution of patients based on types and number of fracture

Variables	Number (%)
Type of Fracture	
Simple fracture	854(72.68)
Compound fracture	321(27.31)
Number Of Bone Fracture	
Single bone fracture	386(32.85)
Two bone fracture	485(41.27)
Multiple bone fracture	304(25.87)

Table 3: Type of injury

Type of Injury	Number (%)
Fracture	1175(67.02)
Upper limb	351(29.87)
Lower limb	664(56.51)
Pelvis	94(8.0)
Spine	41(3.48)
Rib fracture	25(2.12)
Dislocation	67(3.82)
Upper limb	43(64.17)
Lower limb	24(35.82)
Sprains and strains	148(8.44)
Lacerations	154(8.78)
Contusions	136(7.75)
Crush injury	73(4.16)

Table 4: Associated visceral injury

Associated Visceral Injury	Number (%)
No visceral injury	1327(75.69)
Head injury	321(18.311)
Thoracic injury	35(1.99)
Abdominal injury	53(3.02)
Pelvic and genitourinary injury	17(0.96)

4. Discussion

Trauma, particularly that occurring from RTA has become major health problems throughout the world and especially in low and middle income countries [15, 16] Trauma topped the list of primary diagnoses made in admitted patients. Similar observations have been reported in other parts of the world [17-20], majority of our admissions were injury related. Our study shows that road traffic accidents (61.03%) are the commonest cause of injury in our centre. This shows that probably co-operation, awareness and concern for others and good riding and driving habits are essentials among all road users. This high prevalence of RTA, noteworthy as it has implications for the provision of adequate facilities for managing road traffic injuries. This high rate is probably because of the location of the study center on National Highway-17. The increase of motorcycles use is probably due to the fact that motorcycles

are affordable in terms of price than are motor vehicles. On the other hand its popularity could be due to their ability to maneuver heavy traffic jam and navigate on poor roads in the country side [21, 22]. Due to economic hardship the youth are probably buying motorcycles for public transport business in order to earn living. Motorcycle is a most dangerous mode of transportation than automobile because there is no structure to protect the rider during a crash. In developed countries motorcycling is for fun, sports and outing. However in developing countries motorcycle is used as means of public transport and as a form of employment for youth [21, 22]. The youth are using their motorcycles as makeshift taxis, often without licenses or personal protection [23]. This coupled with poor road conditions has created a perfect environment for motorcycle related trauma.

In the present study, other modes of injuries were falls in 25.49 percent cases (n=447), occupational injuries in 65 cases (3.70%), assault in 161 cases (9.18%) and sports related in 10 cases (0.57%). Solagberu, *et al*. [13] has reported 62.3% prevalence of RTA in their trauma series from Nigeria. Gururaj G [24] conducted a study in 2004 and found that RTA was responsible for 52% of injuries, falls for 13%, occupational injuries constituted 4% and assault in 3% of total injuries. In the study by Huda N [25] the commonest mode of injury was roadside accident seen in 48.13% cases, followed by fall in 29.5%, assault in 5.4%, occupational injuries 10.5%, sports related in 4.17% and firearms in 2.08% except in a study by L.O.A. Thani, O.A. Kehinde *et al*, Nigerian teaching hospital road traffic accident was the most common cause of injuries in 90.6 percent cases [26].

The majority of motorcycle crash injury victims were of the age between 11 and 45 years (70.27%). This is similar to other studies where the majority of patients involved in motorcycle crash were aged between 15 and 40 years (25-40%) [21, 22, 27-30]. In contrary two studies done elsewhere reported the majority of motorcycle crush injury victims (40% to 50%) to be less than age of 20 years [31, 32]. The reason why the youth (at the age of 20 - 40 years) are involved in motorcycle could be explained by the fact that at this age group majorities are engaged in productive activities that require them to move fast enough from one area to another and in so doing are predisposed to risks of being involved in road traffic crashes. Considering the maximum involvement of individuals in the economically productive years, RTA may have an important economic impact. It also implies that interventions should be designed so as to target these individuals.

Majority of those injured in the present study were males (73.35 percent, n=1286) and 26.64 percent (n=467) were females. This is in conformity with other studies in India [30, 33-38]. Preponderance of males attributed to their greater exposure to traffic and more risky behavior than females. In the present study fractures were the most frequently seen injuries accounting for 67.02 percent (n=1175) of all injuries and the most common site was lower limb in 56.51 percent cases (n=664). The vulnerability of the extremities in particular the lower limbs could be due to a number of factors such as anatomical location, lack of protectors on the extremity and poor assembly of rear wheel. A cross-sectional study in India showed that fractures were the commonest injury among the victims of nonfatal road traffic accidents, and majority of the victims were in the age group of 18-37 years [39]. In China the data of 2213 patients with traffic trauma showed that fracture of extremities (53.3 Percent) occurred most often, cranio-cerebral trauma (19.4 percent) next, the followed in turn by thoraco-abdominal visceral injury (6.56 percent, spine fracture, (5.37 percent), fracture of ribs (4.88 percent) and pelvic fracture (4.18 Percent) [40]. In Africa a retrospective analysis of nonfatal road traffic crush victims still showed that the commonest injuries were fractures (69.0 percent) with the tibia/fibula being most fractured bones (30.3 percent) [41]. Another hospital based study of 450 cases admitted due to traffic accidents in India revealed that commonest type of injury was a fracture (49.33 percent) and the most common site of fracture was a lower limb (48.2 percent) [42].

In the present study simple fractures were seen in 72.68% cases (n=854) and compound fractures were present in 27.31% cases (n=321). In a study by Chetna Malhotra, MM Singh [43] compound fractures were present in 31.6% cases. In the study Huda N [25] compound fractures were seen in 39.9 percent cases and simple fractures were present in 60.1 percent cases. The age of individuals affected as well as the force exerted by muscle attachments to the long bones could be the reasons for the finding recorded [44].

5. Conclusion

In this study, Road Traffic Accidents (RTA) were demonstrated to be a leading cause of bone fractures especially in individuals in their 3rd and 4th decades of life, constituting most of its victims. The emergency service provides the first impression on the patients and their attendances which must be a positive one. Quick and competent care can save lives and also reduce the severity and duration of illness. Road safety regulations should be strengthened and enforced. Manpower should be developed; vital infrastructures such as diagnostic and therapeutic facilities should be provided and upgraded on a regular basis. This would go a long way in reducing this burden.

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