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The Pattern of Orthopedic Fractures and Visceral Injuries among Patients in a Tertiary Care Hospital: An Observational Study

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Abstract **Original Research Article**

Background: Orthopedic fractures, traumatic injuries, dislocations, and visceral injuries pose significant mortality and morbidity around the world and are a critical and growing concern for healthcare systems. The aim of this study to assess the pattern of orthopedic fractures and visceral injuries and find factors associated with these fractures. ***Methods:*** This study was a retrospective observational study that was conducted on all of the patients who were admitted to the department of orthopedics at Medical College women and Hospital during the study period between April 2018 to June 2022 those who fulfilled the selection criteria were enrolled in this study. A total of 147 Patients of all age groups of either gender with one or more fractures were included. ***Result:*** A total of 147 road traffic crash victims with orthopedic fractures ranged from 5 to 85 years old. The majority of respondents, 81 (55.10%), were in the young age group (21 to 40 years) and 26% were female, and 74% were male. Regarding patients' marital status, almost similar proportions of married 75 (51.02%) and unmarried 72(48.98%) cases were noted. Majority 44(29.93%) of the patients had fracture in femur, second majority 35(23.81%) of the patients had fractures in tibia/fibula and 101(68.7%) cases were simple fractures and 46(31.3%) cases of compound fractures. Associated visceral injury was the head injury in 32(21.8%) cases and thoracic injuries in 12(8.2%) cases. ***Conclusion:*** In conclusion, orthopedic fractures and visceral injuries were the most frequent traffic injuries posing a high risk of mortality and morbidity. Femur and Tibia/fibula were more frequent, and nearly one-third of the injured people were affected with visceral injury, where the head injury was the most common. Additionally, we saw that male orthopedic patients and youths were the most affected.

Keywords: Orthopedic Fractures, Visceral Injuries, Traumatic injuries, Head injury, RTA.

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INTRODUCTION

Orthopaedic fractures, traumatic injuries, dislocations, and visceral injuries pose significant mortality and morbidity around the world and are a critical and growing concern for healthcare systems. Orthopaedic fractures and visceral injuries are almost three times more common in men than women [1]. According to various studies, Men frequently sustain more severe injuries in car accidents than women [2–8]. The most common age groups for orthopaedic fractures and visceral injuries are younger ones [4-5, 9-12]. The most frequent injuries among unbelted drivers and passengers are head and facial injuries [13]. Studies have shown that those with low socioeconomic status are more likely to suffer a spine or trunk fracture [2, 14]. Younger age groups are particularly vulnerable because they engage in productive activities that need them to move quickly from one location to another and because of their risky behaviors [11, 12, 15]. Several factors are associated with these injuries, i.e., Road and traffic accident (RTA), fall, Assault, and sport-related injuries. According to the World Health Organization [WHO] 2018 Report, 1.35 million people worldwide die in traffic accidents each year, and 20 to 50 million suffer significant injuries [16]. They also dedicated their world health day 2004 to road safety to grow awareness of people [17]. These accidents significantly raise the burden of disease and mortality worldwide, but especially in poorer nations [18-20]. One of the leading causes of illness and mortality among working-age persons in developing countries is motorcycle-related trauma [21]. However, the demographic groups most at risk of being hurt or dying in car accidents are those

from lower socioeconomic classes [22, 23]. A rise in morbidity and fatality in developing nations is being attributed to several factors, including rapid motorization, inadequate traffic, road infrastructure, and road user behavior [24**].**

OBJECTIVE OF THE STUDY

This study aimed to assess the pattern of orthopaedic fractures and visceral injuries and find factors associated with these fractures.

MATERIALS AND METHODOLOGY

This study was a retrospective observational study that was conducted on all of the patients who were admitted to the department of orthopaedics at Medical College women and Hospital during the study period between April 2018 and June 2022 those who fulfilled the selection criteria were enrolled in this study. A total of 147 Patients of all age groups of either gender with one or more fractures were included. All data were processed and analyzed with the help of SPSS (Statistical Package for Social Sciences) version 21. The data were expressed as frequency and percentage in tables and graphs.

RESULT

Table1: Socio-demographic characteristics of orthopaedic fractured patients

Variable	Frequency	Percentage
Age		
<10	10	6.80
10-20	12	8.16
21-30	43	29.25
31-40	38	25.85
41-50	22	14.97
51-60	12	8.16
>60	10	6.80
Marital Status		
Married	75	51.02
Unmarried	72	48.98
Education		
Illiterate	20	13.61
Primary	36	24.49
Secondary	62	42.18
Higher Educated	29	19.73
Mortality		
Alive	127	86.39
Death	20	13.61

A total of 147 road traffic crash victims with orthopaedic fractures ranged from 5 to 85 years old where the majority of respondents, 81 (55.10%), were in the young age group (21 to 40 years). Regarding patients' marital status, almost similar proportions of married 75 (51.02%) and unmarried 72(48.98%) cases were noted. The educational levels of participants were dominantly high school complete, 62(42.18%). Out of total fracture cases accounting for 20(13.61%), victims died; of those 85.0% were males.

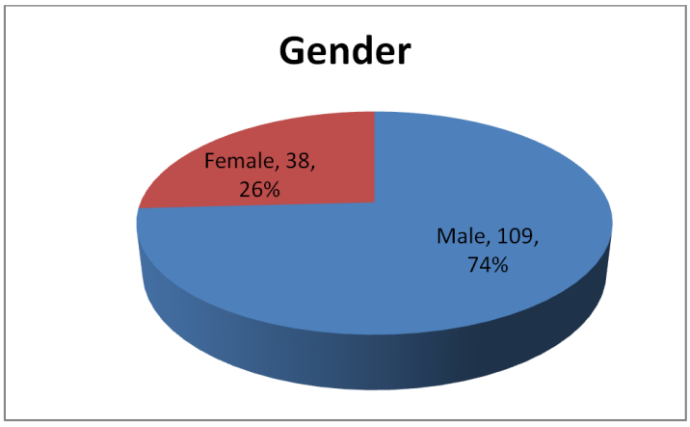

Figure 1: Gender distribution of the study patients

This figure shows the gender distribution of the study patients, where 38(26%) were female, and 109(74%) were male.

Table 2: Types of orthopaedic fracture

Types of Fracture	Number	Percentage
Femur	44	29.93
Tibia/Fibula	35	23.81
Humerus	17	11.56
Patella	12	8.16
Pelvic	9	6.12
Radius/Ulna	8	5.44
Ankle	6	4.08
Clavicle/Scapula	5	3.40
Spine	4	2.72
Carpals/Meta-carpals	4	2.72
Tarsals/Meta-tarsals	2	1.36
Ribs	1	0.68

This table shows the distribution of different types of bones affected in the enrolled subjects. Majority 44(29.93%) of the patients had fracture in femur, second majority 35(23.81%) of the patients had fractures in tibia/fibula and followed by 17(11.56%) in humerus, 9(6.12%) in patella, 8(5.44%) in pelvic, 8(5.44%) in radius/ulna, 6(4.08%) in ankle, 5(3.40%) in clavicle/scapula, 4(2.72%) in spine.

Table 3: Associated visceral injury of the study patients

Associated Visceral Injury	Frequency	Percentage
Without visceral injury	95	64.6
Head injury	32	21.8
Thoracic injury	12	8.2
Abdominal injury	6	4.1
Pelvic and genitourinary injury	2	1.4

This table shows the visceral injury of the study patients. The most commonly associated visceral injury was the head injury in 32(21.8%) cases. Thoracic injuries in 12(8.2%) cases, abdominal injuries were present in 6(4.1%) cases, pelvic and genitourinary injuries in 2(1.4%) cases, and no visceral injuries were found in 95(64.6%) cases.

Table 4: Factors associated with injury

Associated Factors of Injury	Number	Percentage
RTA	82	55.78
Fall	34	23.13
Assault	12	8.16
Sports-related	7	4.76
Machine	5	3.40
Self-Skid	2	1.36
Others	5	3.40

This table explained that RTAs were responsible for 82 cases (55.78%) of all traumatic orthopaedic injuries and followed by falls accounting for 34 patients (23.13%) of injuries. Additional factors included: assault in 12 cases (8.16%), sports-related injuries in 7 cases (4.76%), machine-related injuries in 5 cases (3.4%), self-skid injuries in 2 cases (1.36%) and others in 5 cases (3.4%).

Table 5: Distribution of patients based on types of fracture and associated factors

Variables	RTA	Fall	Assault	Sports-related	Machine	Self-Skid	Others	Total Number	Percentage
Type of Fracture									
Simple fracture	43	30	10	7	4	2	5	101	68.7
Compound fracture	39	4	2	0	1	0	0	46	31.3
Number of fracture									

Single bone fracture	26	13	4	3	2	2	4	54	36.7
Two bone fracture	32	18	6	4	2	0	1	63	42.9
Multiple bone fracture	24	3	2	0	1	0	0	30	20.4

Table 5 revealed the distribution of patients based on types of fracture and associated factors, where 101(68.7%) cases were simple fractures and 46(31.3%) cases of compound fractures. A single bone fracture was present in 36.7% percent of cases (n=54), two bone fractures were present in 42.9 percent of cases (n=63), and multiple fractures were seen in 20.4 percent (n=30).

DISCOUSION

The research found that fractures from traffic accidents primarily affected younger age groups (between 21 and 30 years old). This result is consistent with research from Saudi Arabia (21–30 years old) [1], where young adults make up the bulk of the victims of traffic accidents. Younger groups may be more impulsive, quick with cars, and enthusiastic than older groups in their risk-taking. This is nearly equivalent to the reported ages of 33.5, 34.5, and 41.14 years in their separate investigations, according to Manwana ME *et al.,* [25], Soleymanha *et al.,* [26], and Saikiran Velpula *et al.,* [27]. In this study, males (74%) tended to have Orthopaedic fractures more frequently. This result is consistent with research from Germany (76%) [3] and Iran (77%) [4]. This result is consistent with a few studies conducted in India [28–33]. This might be because men engage in more outside activities than women, are exposed to more traffic, drive faster than they should, act impatiently, and engage in riskier conduct. In the present study, injury types were RTA (55.78%), falls (23.13%), assaults (8.16%), and sports-related injuries (4.76%). In their trauma study from Nigeria, Solagberu *et al.,* [24] observed a prevalence of RTA of 62.3%. In 2004, Gururaj G [34] did a study and discovered that RTA caused 52% of injuries, falls 13%, occupational injuries 4%, and assault 3% of all injuries. Similarly, the most common cause of injury in Huda N's study [35] was a roadside accident, which occurred in 48.13 percent of cases. Next came falls in 29.5% of cases, assaults in 5.4% of cases, sports-related injuries in 4.17%, and firearms in 2.08% of cases. Fracture, especially that resulting from RTA, has emerged as a serious global public health issue, particularly in low- and middle-income nations [36, 36]. The majority of our admissions were injury-related, and comparable observations have been made in other parts of the world [38–41]. In our hospital, injuries are most frequently caused by automobile accidents (55.78%), according to our analysis. This suggests that excellent riding and driving behaviors, cooperation, and awareness of others' needs are important for all users of the road. This high rate of RTA is notable because it has an impact on the availability of facilities that are appropriate for treating injuries sustained in motor vehicle accidents. Bikes are more inexpensive than motorcars in terms of pricing is the reason for the rise in the use of motorcycles. The youths are likely purchasing motorcycles for the public transportation industry because they are experiencing financial hardship. Because there is no structure to shield the rider during a collision, the motorcycle is a much more risky form of transportation than the car. In industrialized nations, riding a motorcycle is for recreation, sport, and travel. But in developing nations, motorcycles are used for public transportation and as a young people's employment method [21, 42]. As per our study, Majority 29.93% of the patients had fracture in femur, second majority 23.81%)of the patients had fractures in tibia/fibula and followed by 11.56% in humerus, 6.12% in patella, 5.44% in pelvic, 5.44% in radius/ulna, 4.08% in ankle, 3.40% in clavicle/scapula, 2.72% in spine. This finding is in similar with other findings, where fumerus, and Tibia/fibula Orthopaedic fracture injuries were the common isolated fractures in Saud Arabia [9], and USA [43] respectively. Simple fractures were observed in 68.7% of patients in the current study, while complicated fractures were found in 31.3% of cases. In a research by Chetna Malhotra, complex fractures were found in 31.6% of cases, according to MM Singh [44]. Compound fractures were observed in 39.9% of patients in the study by Huda N [35], whereas simple fractures were present in 60.1% of cases. This study indicated that visceral injuries occurred in 35.4% of Orthopaedic patients. Head injuries (21.8%) were the most frequent visceral injuries. The visceral injury was linked to a number of parameters, including the individual effect (male sex, age 21 to 30, compound type of fracture). Our research specifically found that people with greater levels of education were significantly more likely to have a head injury with viscera. This may be because, among all types of visceral injuries, brain injuries accounted for a significant fraction (21.8%) of those suffered by victims who were highly educated and driving. The conceivable presumption may be that car passengers utilize their seat belts less frequently and that their vehicle is reasonably functional and fitted with a safety device. According to the study, female Orthopaedic patients had a much lower incidence of head visceral injury than male Orthopaedic patients.

CONCLUSION AND RECOMMEDATIONS

In conclusion, Orthopaedic fractures and visceral injuries were the most frequent traffic injuries posing a high risk of mortality and morbidity. Femur and Tibia/fibula were more frequent, and nearly one-third of the injured people were affected with visceral injury, where the head injury was the most common.

Additionally, we saw that male Orthopaedic patients and youths were the most affected. It suggests that government organizations enforce laws requiring wearing seatbelts and place road signs to remind drivers and passengers to remain alert while driving and should take some activities to increase awareness of younger age groups and guys.

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