

Demographic Study of Orthopedics Trauma among the Patients Attending the Accident and Emergency Department in Indus Hospital Badin.

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ABSTRACT

Introduction: The magnitude and severity of trauma in rural populations is well documented worldwide, leading to building of well-equipped trauma centers. However, the magnitude of such injuries in documented in Pakistan. This study sought to quantify the orthopedic trauma presenting in a rural based hospital.

Methods: All patients presenting with orthopedic trauma from January 2018 to December 2020 were included in this retrospective review. Data was extracted on etiology of trauma and region involved. Data was entered and analyzed using in SPSS version 20.

Results: Total of 5476 orthopedic trauma patients presented to Emergency Department. Out of these, 3824 (69.8%) were males. Most common region involved was upper limb while the most common bone involved in upper limb was radius and ulna while in lower limb was tibia fracture. There were 2044 open injuries needing early intervention along with 519 spine injuries.

Conclusion: There was a huge spectrum of injuries over the period of two years. This is a wake-up call for more specialized trauma centers to be set-up to be established in rural area to decrease the load on urban health care and provide a convenient facility for the patients.

Keywords: Trauma, rural area, health care.

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INTRODUCTION

Orthopedic trauma involves injuries to joints, bones, tendons, ligaments, muscles, and nerves⁽¹⁾. Road traffic accidents are one of the major causes of orthopedic trauma which result in significant number of deaths and injuries^(2,3). With improvement in vehicles and traffic rules and regulations worldwide the numbers of deaths in high-income countries indicate a downward trend however, never the less these accidents results in significant burden on the social and economic aspect⁽⁴⁾.

Most of the effected patients of road traffic accidents in developing countries are pedestrians, cyclists and bikers⁽⁵⁾, with most of the individuals

being from lower socio-economic groups^(6,7). Study by Khani et al showed that bike riders in Pakistan are significantly at a greater risk of road traffic accidents and have led to higher rate of fatal and non-fatal orthopedic injuries⁽⁸⁾. Even in developed countries, the accident risk of motorcycles is 20 times more compared to other vehicles⁽⁹⁻¹¹⁾.

Orthopedic trauma management includes medical resuscitation, stabilization of injuries and restoration of function^(12,13). This is neither simple nor straightforward for patients and care givers as it includes cost of treatment, staying away from work and many other psychological factors especially in a low-income country. It is estimated that the cost of trauma care exceeds US\$400 billion annually in the

United States⁽¹⁴⁾. Literature from developed countries have been seen to be focused on cost of treatment and psychological status along with the functional recovery, morbidity and mortality following orthopedic trauma but data from developing countries is scanty⁽¹⁵⁻¹⁸⁾.

We, therefore set to assess the frequency of orthopedic injuries among patients attending emergency department at a district level hospital. This study provides baseline statistical data on the current orthopedic trauma and will highlight the changes that can be introduced to deliver care of highest standard and decrease the load on major healthcare facilities. Reported data could be used to set guideline for the policymakers to devise policies for tackling the increasing burden of trauma.

MATERIALS AND METHODS

This retrospective study was conducted. Data was extracted of all patients who presented to emergency department from January 2018 to December 2020. All patient who had suffered orthopedic injuries and presented in emergency department for orthopedic review or admission were selected and data was reviewed. After obtaining Ethical approval from the institutional review board (IRB) of the institute, patients presenting with orthopedic trauma and with complete data and medical records were enrolled. The data collected included information on patients'

demographic characteristics, description of fracture, associated injuries, and treatment given. The extracted data was reviews and entered into the statistical package for social science (SPSS) version 21. Descriptive statistics were used by computing frequencies with their percentages for all categorical variables. All statistical methods that were used with a P value less than or equal to 0.05 were considered statistically significant.

RESULTS

A total of 5476 patients presented at Emergency Department which had orthopedic injured and needed review or admissions. Majority of these patients were males that is 3824 (69.8%). The pattern of age distribution was mixed and included patients in all age groups with almost similar numbers. The injuries included those of upper limb, lower limbs, soft tissue and spine injuries shown in Table 1. Most common region involved was upper limb while the most common bone involved in upper limb was radius and ulna while in lower limb was tibia fracture. There were 2044 open injuries needing early intervention. These open injuries were of different grades and associated fractures were mainly complex. Most of these injuries were high energy road traffic accidents. 519 patients had presented with spine injuries.

Table 1: Showing age and injury distribution

	Gender		Nature of Injury		Age			
	Female	Male	Closed	Open	Less than 18	18-29	30-42	more than 42
Upper Limb Injury	878 (53.2%)	1852 (48.4%)	919(45%)	1126 (55%)	696 (50.5%)	637 (47.9%)	689 (49.5%)	667 (51.3%)
Lower Limb Injuries	781 (47.3%)	1921 (50.2%)	995 (49.1%)	1015 (49.7%)	627 (45.5%)	639 (48%)	723 (51.9%)	680 (52.3%)
Spine	228 (13.8%)	291 (7.6%)	99 (4.9%)	231 (11.3%)	159 (11.5%)	133 (10%)	142 (10.2%)	79 (6.1%)
Soft Tissue Injury	926 (56%)	2086 (54.6%)	915 (45.1%)	1458 (71.3%)	796 (57.8%)	757 (56.9%)	736 (52.9%)	675 (51.9%)
Count	1652	3824	2028	2044	1377	1330	1392	1300

DISCUSSION

Pakistan being a developing country with a population of about 230 million, faces many hurdles in trauma care especially in rural areas where the number of qualified orthopedic and trauma specialists, orthopedic nurses and plaster technicians are limited. In small rural areas of the country, it is often difficult to find equipped primary care centers and programs for essential trauma care particularly for orthopedic trauma. With the increasing number of trauma and unavailability of funds in addition to lack

of available data, planning is often not up to the mark.

According to study Humail et al, data of Karachi, which is largest city of the country, a total of 3085 orthopedic trauma patients presented in the largest hospital of the city in two years. However, in out rural setting in same duration the number of patients presented was much higher (n=5476). One reason to this larger present would be the unavailability of other trauma centers in rural areas such as when comparing to urban areas such as. This is a larger

burden on the rural health centers which are already short of trained personals⁽¹⁹⁾.

The male dominance of the patients in our study (over two third) was similar to those reported previously^(20,21). This is particularly due to the fact that men are mostly the bread earners of the community and hence more prone to injuries while travelling for work. Upper limb injuries were found to be more common than lower limb injuries in our study. This is particularly an important aspect since these patients with upper limb injuries tend to have delayed return to work and many other psychological problems develop due to physical dependence on others. Even lower limb injuries were not uncommon, and this leads to difficulty in mobilization again hindering return to work. Open injuries were also significantly present which tend to threaten later complications like osteomyelitis later on.

Global Public Health recognizes trauma as current epidemic⁽¹⁹⁾ increasing by every passing moment. The burden of disease by trauma as per previous WHO reports has jumped to third in place in 2020 compared to 9th in 1990 worldwide⁽²²⁾. Pakistan being a developing country with majority of population residing in its rural areas where medical services are scarce, including the provision of orthopedic services this burden of trauma is significant. Scarcity of trained and qualified orthopedic surgeons and lack of medical equipments and structure is a major problem in these areas^(23,24). These problems exists in such large numbers, leading to a number of orthopedic injuries and pathologies felling prey to mal-treatment by bone-settlers, quacks and un-trained and un-authorized medical personnel⁽²⁵⁾. Result of these problems are neglected trauma, infection, mal-union and at times leading to loss of limb or life. Patients in rural areas are forced by the situation to move to urban areas in search of medical facilities which adds the burden of travelling cost to their cost of treatment as well as delaying urgent needed care⁽²⁶⁾. Thus, it is a huge challenge to provide orthopedic facilities in rural areas of Pakistan.

Providing access to orthopedic trauma in rural areas has been recognized as a challenge for decades not only in developing countries but even developed countries⁽²⁷⁾. Data in 2008, identified serious problems in access to quality emergency and trauma care in Pakistan⁽²⁸⁾, however no data is available after that to compare any improvement. Mass education and awareness remains the utmost pillar which can improve health care in the rural

Table 2: Distribution of injuries

	Gender	
	Females	Male
Upper Limb Injury	878 (53.2%)	1852 (48.4%)
Lower Limb Injuries	781 (47.3%)	1921 (50.2%)
Spine	228 (13.8%)	291 (7.6%)
Soft Tissue Injury	926 (56%)	2086 (54.6%)
Clavicle	50 (3.0%)	193 (5.0%)
Scapula	31 (1.9%)	43 (1.1%)
Proximal Humerus	34 (2.1%)	96 (2.5%)
Medial Humerus	48 (2.9%)	87 (2.3%)
Distal Humerus	31 (1.9%)	42 (1.1%)
CONDYLAR	25 (1.5%)	55 (1.4%)
Olecranon	28 (1.7%)	39 (1.0%)
Coronoid	10 (0.6%)	37 (1.0%)
Capitulum	37 (2.2%)	63 (1.6%)
ELBOW DISLOCATION	38 (2.3%)	69 (1.8%)
proximal Forearm	49 (3.0%)	97 (2.5%)
Midshaft forearm	71 (4.3%)	124 (3.2%)
MIDSHAFT RADIUS	42 (2.5%)	71 (1.9%)
ULNA	19 (1.2%)	59 (1.5%)
Distal Forearm	92 (5.6%)	148 (3.9%)
Distal Radius	94 (5.7%)	192 (5.0%)
Carpus fracture	18 (1.1%)	63 (1.6%)
Metacarpal fracture	42 (2.5%)	101 (2.6%)
Phalanx fracture	59 (3.6%)	126 (3.3%)
Shoulder dislocation	6 (0.4%)	22 (0.6%)
Mcpj	5 (0.3%)	15 (0.4%)
Pipj	23 (1.4%)	67 (1.8%)
DIPJ	26 (1.6%)	43 (1.1%)
HIP DISLOCATION	6 (0.4%)	17 (0.4%)
Pelvic	26 (1.6%)	58 (1.5%)
Acetabulum	26 (1.6%)	36 (0.9%)
Head of Femur	8 (0.5%)	35 (0.9%)
Neck of femur	51 (3.1%)	105 (2.7%)
Intertrochanteric	54 (3.3%)	100 (2.6%)
Subtrochanteric	32 (1.9%)	78 (2.0%)
Midshaft Femur	95 (5.8%)	184 (4.8%)
Distal Femur	56 (3.4%)	113 (3.0%)
Patella Fracture	9 (0.5%)	45 (1.2%)
Knee Dislocation	45 (2.7%)	101 (2.6%)
Proximal tibia	48 (2.9%)	134 (3.5%)
Midshaft Tibia	74 (4.5%)	184 (4.8%)
Distal Tibia	42 (2.5%)	119 (3.1%)
Fibula Fracture	22 (1.3%)	76 (2.0%)
Ankle Dislocation	14 (0.8%)	91 (2.4%)
Malleolus	9 (0.5%)	49 (1.3%)
Calcanean	9 (0.5%)	18 (0.5%)
Talus Fracture	37 (2.2%)	111 (2.9%)
Metatarsal	44 (2.7%)	88 (2.3%)
Phalanx	41 (2.5%)	100 (2.6%)
Mtpj	19 (1.2%)	31 (0.8%)
Pipj	10 (0.6%)	23 (0.6%)
DIPJ	4 (0.2%)	25 (0.7%)
Spine	228 (13.8%)	291 (7.6%)
Abrasions	1 (0.1%)	18 (0.5%)
Degloving injury	222 (13.4%)	433 (11.3%)
Abscess	87 (5.3%)	190 (5.0%)
Soft tissue	616 (37.3%)	1445 (37.8%)
Total	1652	3824

areas⁽²⁹⁾. There is a need to place a coordinated program to train adequate personnel that would work in the rural setting (not only doctors but also orthopedic nurses and plaster room assistant). This is particularly important for better outcomes and to reduce burden on health system of rural areas and setting up more trained and equipped trauma centers. Our study has few limitations such as we were not able to complete identify the outcomes of these injuries nor could give a detailed financial aspect resulting from these injuries, however, still the data provided can become a source to investigate different aspects of trauma care and serve to target and improve care.

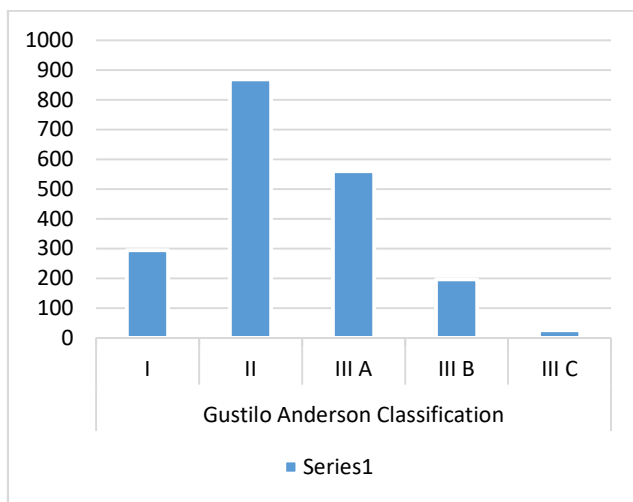


Fig 1: Distribution of Open fractures

CONCLUSION

The provision of basic facilities for trauma care in the health centers is mandatory especially in rural areas. There is a dire need to look into these ever-increasing large numbers of orthopedic trauma cases, and plan further for improvement. In country like Pakistan, if these issues in rural areas are not addressed timely, this could lead to a huge negative impact on a fragile healthcare system of the country.

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