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Original Research Article

Demographics in trauma: a prospective observational study in a tertiary care zonal hospital

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ABSTRACT

Background: Trauma represents a major challenge worldwide and is the leading cause of morbidity and mortality in young population. There is significant change in trauma related injuries due to urbanization, motorization, industrialization and the socioeconomic changes in India. Road traffic accidents (RTA) pose the largest threat to human lives and have become the number one public hazard all across the world causing morbidity and mortality. The aim of this study is to find out the demographics and to determine the injury pattern of surgical trauma cases presenting to this tertiary care zonal hospital.
Methods: A prospective observational study was conducted in a tertiary care zonal hospital from June 2018 to December 2018. Data was collected for 105 patients presented with trauma in surgical emergency centre of this hospital were included in the study which excluded only orthopaedic trauma cases. The data collected was analysed.
Results: Out of 105, 76 (72.38%) were male and 29 (27.61%) were female with 21 (20%) in the 31-40 age group. The average age of cases was 40.2 years. RTA was the major cause of trauma i.e. (77.14%) followed by accidental fall and slips (18.09%) and assaults (4.76%). Contusion was the common injury sustained (45.71%) followed by laceration (38.09%), abrasion (35.23%) and fracture (17.14%).
Conclusions: There is a need for trauma registries which can help to formulate strategies towards decreasing the burden of trauma and improved outcomes at hospital as well as in public health.

Keywords: Trauma, Road traffic accidents, Surgical emergency

INTRODUCTION

Trauma is a major global challenge more so because it is the leading cause of morbidity and mortality in young population.[1] Many factors have resulted in the rise of this problem, chief amongst them being- urbanization, motorization, industrialization and change in the socioeconomic values. Road traffic accidents (RTAs) represent a major threat to human lives and have become the number one public hazard worldwide.[2,3] Each year more than 8 million people suffer injuries and more than 500,000 people die due to RTA.

The epidemiology of trauma is poorly understood as there are few studies from developing countries discussing trauma.[5-8] The data is limited as there is lack of statistics, inadequate health information systems, poorly maintained trauma registries and inadequate trauma care centers. The global rise in injuries is being felt most acutely in developing countries whose health care systems are not

prepared to tackle this crisis. Hospital-based trauma registries are the means for meeting this challenge. Trauma registries are facility-based and are not able to provide a burden of disease for the country; however they can provide rapid, and sentinel surveillance at locations where people access trauma care. In addition, they provide data to support systematic approaches to trauma care and prevention, quality improvement in trauma care, as well as opportunities to identify priority targets for public health interventions in the community.[9-11]

As a first step towards developing trauma registry in a tertiary care zonal hospital, this study was conducted to know the demographics of trauma and pattern of injury sustained so that hospital can be geared up to provide comprehensive trauma care. Hence, a study was planned with an aim to find out the demographics of trauma presenting to this tertiary care zonal hospital and to know the pattern of injuries sustained with objectives to know the gender preponderance of the trauma, the age group of the individuals involved, the pattern of injuries e.g. abrasions, contusions, lacerations, fractures and to know the most common body region injured in the trauma.

METHODS

A prospective observational study was conducted at a tertiary care zonal hospital in Kanpur, northern India (No 7 Air Force Hospital). This center is having 24 hour emergency surgical, orthopedic, medical, paediatric, and obstetric care. Resources available at this hospital include an intensive care unit, a radiology department equipped with X-ray, computed tomography, magnetic resonance and ultrasound imaging, and available operating theatres 24 hours a day.

The study was carried out for duration of 6 months from June 2018 to December 2018. A total of 105 patients presented with trauma in Surgical Emergency Centre of this hospital. The demographics, the pattern of injury, mode of injury (i.e RTA, accidental fall/slip, assault) and body region involved was noted in a pre-designed and pre-tested trauma performa. All patients presented with trauma were included in the study during the study time in the surgical emergency centre irrespective of age. The cases which required orthopedic emergency care were excluded from the study. Ethical committee approval was obtained prior to the commencement of the study. The data thus collected was entered in Microsoft Excel and analyzed.

RESULTS

Out of the total 105 patients presented with trauma in emergency surgical center, 76 (72.38%) were male and 29 (27.61%) were female (Table 1). The age wise distribution of the patients is shown in Table 2. Maximum number of patients i.e. 21 (20%) out of 105 are from 31-40 age group. The average age of surgical trauma cases was found to be 40.2 years.

Table 1: Gender distribution of cases of surgical trauma.

Gender	Age (in years)	Percentage (%)
Male	76	72.38
Female	29	27.61
Total	105	

Table 2: Age distribution of cases of surgical trauma.

Age group (in years)	No. of patients	Percentage (%)
0-10	6	5.71
11-20	9	8.57
21-30	20	19.04
31-40	21	20
41-50	15	14.28
51-60	17	16.19
61-70	12	11.42
71-80	5	4.76
81-90	0	0
91-100	0	0
Total	105	

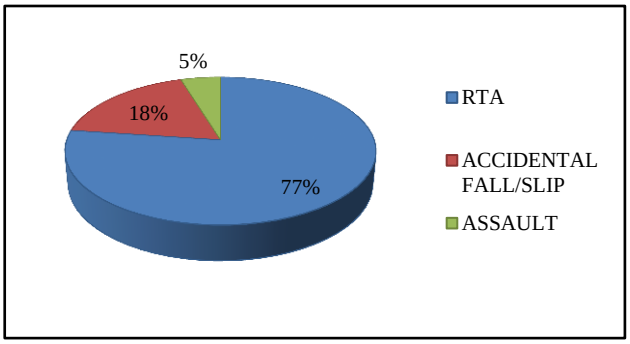

Figure 1: Mode of injury among surgical trauma cases.

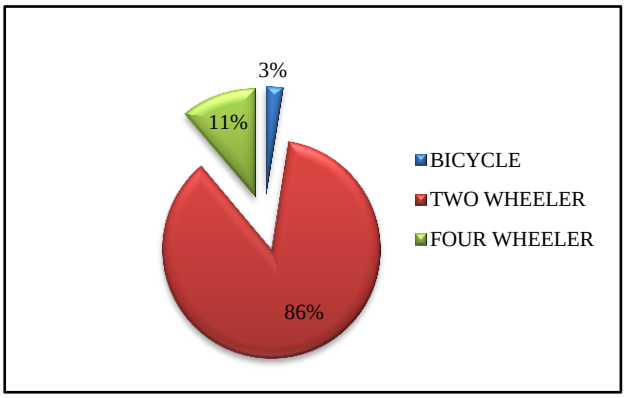

Figure 2: Vehicle involved in RTAs causing surgical trauma cases.

Mode of injury distribution is shown in Figure 1 while Figure 2 depicts the vehicles involved in the surgical trauma cases. Out 105 patients, road traffic accident was

the major cause of trauma 81 (77.14%) followed by accidental fall and slips 19 (18.09%) and assault 5 (4.76%). Two-wheeler was responsible for maximum accidents leading to trauma (86.41%).

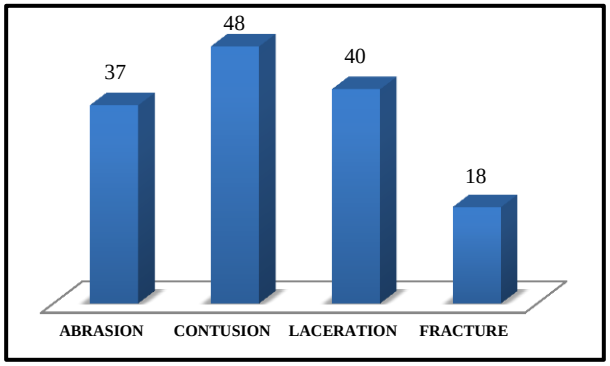

Figure 4: Nature of injury among the trauma cases.

Table 3: Body Region involved.

Body region	Frequency	Percentage (%)
Head	38	36.19
Face	32	30.47
Neck	0	0
Chest	14	13.33
Abdomen	3	2.85
Torso including spine	9	8.57
Right upper limb	13	12.38
Left upper limb	37	35.23
Right lower limb	20	19.04
Left lower limb	9	8.57

Different nature of injuries sustained during trauma is shown below in Figure 3. Contusion is most common injury sustained (45.71%) due to trauma followed by laceration (38.09%), abrasion (35.23%) and fracture (17.14%). Different body regions involved in trauma is shown below in Table 3. Head is the most common body region involved in trauma (36.19%) followed by left upper limb (35.23%), face (30.47%), right lower limb (19.04%) and chest (13.33%).

DISCUSSION

India is one of the fastest growing economy in the world.[12] Due to the rapid economic transition, there is an increase in number of automobiles on the roads particularly two wheelers. There is sadly a rapid increase in RTAs too along with this. RTAs are known to be the main cause of trauma in the productive age group. In our study the maximum number of patients sustaining trauma were in the age of 31-40 years (20%). This is consistent with other studies carried out by Rastogi et al which also showed that injuries occur in more productive age group.[2,13,14]

Like other studies in our study too, males were found to have more chances of trauma (72.38%) as compared to females (21.61%). As males are the breadwinner of house in our society and this activity involves traveling on roads, it seems that they are more vulnerable to injury. This is consistent with other studies carried out by Stoica et al.[3] In our study, injuries caused by two wheelers are responsible for 86.41% of trauma which is much higher than that found in previous studies like Rastogi et al and Mishra et al.[2,15] The higher incidence in our study may be because of failure of road traffic management and lack of obedience of safety rules. Head was the most commonly injured region in trauma patients of our study (36.19%) Though helmets have been made compulsory, the rules are not enforced strictly. The practice of helmet wearing should be encouraged both in motorcycle and bicycle riders to reduce the incidence of injuries. Government should put more emphasis on these vulnerable road users and formulate policies regarding road safety.[16,17]

CONCLUSION

There is growing burden of trauma related injuries worldwide. Disparity exists in trauma care facilities between developing countries and developed countries. In developed countries a multi-tiered system approach to injury prevention and trauma care has led to considerable reductions in morbidity and mortality. Hospital-based trauma registries have been an integral part of these systems, allowing rigorous evaluations of public health and hospital-based strategies towards decreasing the burden of trauma and improved outcomes. Our study demonstrated the feasibility of introducing a trauma registry in a tertiary care zonal hospital. It also throws up variations in injury pattern and causes that are specific to this region. There may be a case for formulating policies specific to each region in order to address peculiarities of that part of the country.

This study attempts to evaluate the burden of trauma presenting to a surgical emergency center in a zonal hospital. We cannot comment on the overall burden of injury and pattern of injury nationwide. However, country-specific information for the epidemiology of injury needs to be gathered and trauma registries need to be established for evaluating effective strategies for prevention and care. Our trauma registry at a zonal hospital is a small step in that direction.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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