International Journal of Medicine Research
ISSN: 2455-7404; Impact Factor: RJIF 5.42
Received: 16-01-2019; Accepted: 19-02-2019
www.medicinesjournal.com
Volume 4; Issue 2; April 2019; Page No. 56-58

Descriptive study on patient's injuries, following road traffic accident admitted to Rural Medical College

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Abstract
Background: Road Traffic accidents (RTAs) account for significant but preventable cause of mortality and morbidity with resultant heavy economic burden on healthcare systems. The pattern of Injury varies with the type and speed of vehicle, the position of the victim in the vehicle, use of protective gadgets and whether the victim is a pedestrian.
Material and Methods: The aim of the study is to study the pattern of injuries from road traffic accidents presented to emergency department of our rural hospital. This descriptive case series was done prospectively from 1st February 2018 to 1st August 2018. There were 98 patients in the case series. All the patients with recent injuries were included. Injuries more than 72 hours old were excluded.
Results: Majority of patients had lower limb injuries – 43 (47%), followed by head and neck injuries - 27 (28%), Multiple Injuries - 16 (15.2%), upper limb injuries - 6(5.7%), abdomino-perineal injuries 5 (4.8%), chest injuries - 1 (0.9%). Majority of patients were given curative management and discharged – 59 (60%), while 37 patients were either admitted or referred to a higher center. 2 patients left against medical advice.
Conclusion: Males from 3rd to 4th decade, motorcyclists suffered from lacerations in lower extremities and the cause being skidding due to rain, bad road conditions, reckless driving or being under influence of alcohol.

Keywords: road traffic accidents; lower limb injuries; abdomino-perineal injuries

Introduction
Road Traffic accidents (RTAs) account for significant but preventable cause of mortality and morbidity with resultant heavy economic burden on healthcare systems [1]. It results in death of about 1.2 million people worldwide with more than 90% deaths occurring in low income and middle income countries [2]. It is projected that RTA will be 2nd most common cause of Disability Adjusted life Years in the developing countries in the year 2020 [3]. China is the most populous country in the world and accounts for 13.5% of all deaths due to RTAs.
Only serious cases of Trauma are reported to hospitals, despite this fact, no systemic data is available in literature about trauma. Injury data in developing countries is either derived from hospital records or from police registers and both these sources actually underestimate the total burden of injuries.
The pattern of Injury varies with the type and speed of vehicle, the position of the victim in the vehicle, use of protective gadgets and whether the victim is a pedestrian.
Very few local studies are available on epidemiology and pattern of injuries in road traffic accidents. KVG Medical College is located in town of Sullia, on National Highway 275 between Madikeri and Mangalore. It is a 650 Bedded multi-disciplinary secondary care institute providing healthcare needs to citizens of rural India (Dakshina Kannada). In the past decade, we noticed an increase in number of Road Traffic Accidents owing to increase in automobile vehicles.
This study is carried out to find the pattern of injuries from road traffic accidents presented at emergency department of our KVG Medical College and nearby areas.

Materials and Methods
This is a prospective descriptive study involving all RTAs reporting to our hospital from 1st February 2018 to 1st August 2018.
With 95% confidence level, 0.5 standard deviation and a margin of error (confidence interval) of ± 5%.
Sample Size – 98
Inclusion Criteria – all patients with recent road traffic accidents, less than 72 hours old. Cases older than 72 hrs and those leaving against medical advice were excluded.
Informed consent was taken from either the patients or their attenders (if unconscious or minor).
The data was compiled on a weekly basis from RTA Performa, patients casualty slips, admission files and operation theatre register.
Additional data was obtained from police or ambulance personnel.

The variables noted and analyzed were
1. Patients demographic data
2. Accident site
3. Position of victim
4. Vehicle type
5. Usage of protective gadgets
6. Cause of accident
7. Body region injured
8. Type of injury

9. Clinical stability and
10. Mode of dispose.

Results

We enrolled 98 patients from 1st February to 1st August 2018.

The Sex Distribution was

Males -79 (82.4%)
Females- 19 (17.6 %)
Male: Female = 4. 2: 1

The Mean age of the patients was 28.2 years (SD -12.69, SD error of mean 0.649, range 1-68 yrs)

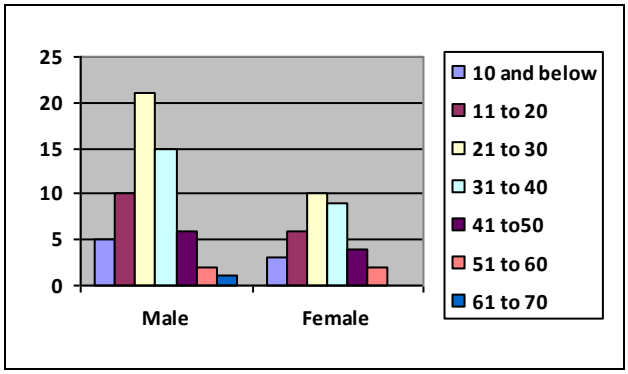

Fig 1: Male and Female distribution

The mean reporting time was 153 mins (Std dev.- 74, Std error- 4 and range 30- 690 mins).

Only 8.1% patients reached the hospital within golden hour only 49.9% within 2 hours and 79% within 3 hours.

Table 1: Risk factors associated with RTA injuries.

Risk Factors	Frequency	Percent
Sex – Male	79	82.4%
Female	19	17.6 %
Accident Site		
National highway 275	60	62.2
Sullia town	38	37.8
Vehicle Type		
Cycle	3	2.6
Motorcycle	70	73.5
Car	6	6.2
Bus	9	7.5
Heavy vehicle	1	0.5
Pedestrian	9	9.6
Victim Position		
Driver	52	53.5
Passenger	36	36.9
Front seat Back seat	5	4.9
Helmet/Seat Belt	31	31.9
Yes	27	27.5
No	71	72.5
Occupation		
Students	25	25.5
Professionals	23	23.6
Laborers	22	22.1
Tourists	18	18.2
Business	4	4.4

Table 2: Cause of Accidents and mechanisms of injury

	Head on Collision	Side Collision	No Collision	Frequency (%)
Skidding	5	5	26	36 (36.9)
Hit by another vehicle	28	4	0	32 (33.5)
Over speed	4	4	1	9 (9.6)
Reckless driving	4	2	1	7 (7)
Road condition/Rains	1	2	3	6 (6.5)
Drunk/Sleepy	1	1	3	5 (5)
Mobile use/Tire burst	0	1	2	3
Total	43	19	36	98

The most common age group was 3rd Decade (32.5%), followed by 4th Decade (24.9%) and then 2nd decade (17.4%).

Table 3: Pattern of Injury

Body area	Abrasions	Lacerations	Fractures (closed)	Bruise/ Hematoma	Total (%)
Head and Neck	4	17	3	3	27 (27.8)
Abdomen Perineum				1	1 (0.8)
Upper Extremity	1	3	-	1	5 (5)
Lower Extremity	6	21	5	11	43 (44.7)
Multiple	2	10	1	2	15 (16.1)
Total	15	52	11	19	98 (100)

Discussion

Globally about 1.2 million deaths occur due to Injuries from RTAs and 90% of these occur in low income and middle income countries [4].

This study shows that Males were injured the most (81.3%) while age wise 3rd (32.5%), 4th (24.9%) and 2nd decades were affected in decreasing order. Younger people are mostly out of their homes and mostly on road in pursuit of education and training. They mostly use public transport, buses, cars, motorcycles, auto rickshaws etc for their travelling needs. Consequently this is the loss of most economically active members of society that subsequently results in economic burden to both the family and the nation.

We found that most affected groups were the students, young professionals, and laborers. (25.5, 23.6 and 22.1%) respectively. Again this reflects the outgoing nature of their profession, making them vulnerable for accidents. The Students used motorcycles and cars, they have reckless attitude and a blatant disregard for traffic rules, dislike wearing helmets and drive fast for fun. Young professionals and their dependents form the 2nd most commonly affected groups. Stress of life, driving under alcohol influence, overworked, and being tired, formed majority of reasons for RTAs. Their dependents (people travelling in backseats) were mostly without any protective gear like helmets or seatbelts.

Regarding patients, Drivers were injured more often (53.5%), followed by passengers (36.9%) and pedestrians

(9.6%). This is in contrast to study conducted in Ethiopia wherein passengers were affected the most (45.8%), followed by pedestrians (33.8%) and lastly drivers (18.8%) [11].

Motorcyclists were most commonly injured group in our study -72 (73.5%) followed by pedestrians 9 (9.6%). A study from Italy[10] reported similar findings. However another study done in western Maharashtra reported pedestrians and motorcyclists as largest group (27.5% each). Regarding the vehicles involved, Motorcycles (73.5%), buses (7.5%), cars (6.2%) and heavy motors (3.6%).

Surprisingly 2nd highest injured were the pedestrians. This is due to lack of education among nearby village residents about use of roads, kids playing on road, unawareness about high speed traffic at national highway 275.

We found 64 accidents occurring on National highway 275 connecting Madikeri to Mangalore, and 34 accidents in Sullia town alongside nearby villages.

In this study, only 8.1% patients presented within the golden hour, about 49.9% within 2 hours and 79% within 3 hours. In Contrast another study from Ethiopia [11] reports 78.4% patients reporting to hospital within 1 hour of accident. Another study from Kolkata [7] reports 14.2% reporting within golden hour. This discrepancy is mostly due to curvy roads from Madikeri to Sullia and from Sullia to Mangalore, and lack of help on highways that doesn't allow early reporting of patients.

Among the cause of Accidents, skidding of motorcycles were the most common. This is mostly due to wet roads, unmarked sudden speed breakers, over speeding. Over speeding is the major factor to both occurrence and severity of RTA.

The usage of safety devices like seat belts, air bags, and helmet reduces the fatality of injuries [9]. However only 27% of patients were using these devices. Hence public awareness and education needs to improve in Indian society.

Regarding site of Injury, Lower extremities were most commonly involved -43 (44.7%), followed by

Head and neck region 26 (27.8%)
Multiple injuries 16 (16.1%)
Upper extremities 5 (5.7%)
Abdomen pelvis and perineum 5(5%)
And thorax 1 (0.8%)

Lacerations without fractures were most frequent type of injury- 30 (31.4%) followed by

Lacerations with fractures- 23 (24.2%)
Abrasions- 18 (18.4%)
Bruises/hematoma- 17 (17.7%)
Closed fractures- 8 (8.3 %)

Regarding the outcome 61% patients were discharged after treatment in emergency department while 33% patients were referred to Mangalore for super specialty interventions which included EDH, SDH, SAHs, Traumatic Urethral Ruptures, Blowout fractures of Orbit, base of Skull fractures etc.

Due to lack of super specialty consultants, most neurosurgery cases, some urological trauma cases were initially managed conservatively, but upon deterioration of condition were referred promptly to Mangalore in our own hospital ambulance.

Limitations of this study include the small sample size and single centre study.

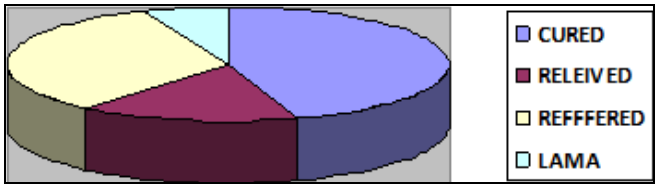

Fig 2: Outcome of Trauma Cases

Conclusion

Males from 3rd to 4th decade, motorcyclists, were most common patients, the cause being skidding due to rain, bad road conditions, reckless driving or being under influence of alcohol.

Lacerations from lower extremities were most common injury type. Madikeri-Mangalore Highway NH275 is not only highly convoluted road, but also less accessible to ambulance services.

In our war against diseases, let's not forget RTAs and continue educating people about the need for obeying Traffic rules, using protective gear, being alert on road. With the help of law Enforcement agencies, media and people of Repute, we can bring down the incidence of these preventable causes of mortality and morbidity.

Conflict of interest: None

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