

Study of Road Traffic Injuries Admitted in Rural Hospital

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Abstract: With the man's invention of the wheel the death knell has continued to toll for many, who are often innocent, but who may happen to be at the wrong place at wrong time. **Objective:** To study the types and factors involved in occurrence of road traffic injuries. **Methodology:** All road traffic injury cases admitted in KH & MRC, Karad during 1st June 2016 to 30th July 2016 were taken. It was a Hospital based cross sectional study. Pretested proforma was used for interviewing the study subjects. **Results:** A total of 50 cases of road traffic injuries were reported. Majority of the cases were under the age group of 30-39 years of age and males were more prone than females. Among the days, maximum occurrence was Tuesday and Thursday [10 (20%)]. Considering each daytime clock we found that 46 RTI (92%) took place during day time. 50% cases received hospitalization within one hour of the accident and 18% got in half an hour. Place of accident was rural area in 52% and 48% in urban. Out of all road traffic accidents, maximum 36 (82%) cases were by two wheelers, 4 (8%) were of 4 wheelers followed by bicycle 3 (6%). Among the injured 32 (64%) were Drivers of these 23 (71.8%) have license & 7 (21.8%) do not have, 13 (26%) were occupants & 5 (10%) were Pedestrians. In type of Crash, Head on collision was seen in 20 (40%) followed by side collision 13 (26%). Accidents under the influence of Alcohol were 14%. Requirement of blood transfusion was 50% in the cases. Safety Measures were used in 5% cases. **Conclusion:** A significant number of road traffic injuries can be prevented and lot of lives can be saved if proper safety measures are used, alcohol use is avoided, traffic rules and laws are followed.

Keywords: Road traffic injuries, pedestrian, collisions, injury

1. Introduction

With the man's invention of the wheel the death knell has continued to toll for many, who are often innocent, but who may happen to be at the wrong place at wrong time. Current trends in population, industrialization and urbanization are putting heavy pressure on transport network in general and on road system in particular. Vehicles were designed to ease the fast lifestyle of the people but this invention turned into a biggest disaster risking many lives especially in India.

The global status report on road safety 2013 indicates that the worldwide the total number of road traffic deaths remain unacceptably high at 1.24 million per year.¹ India is no exception and data showed that more than 1.3 lakh people died on Indian roads, giving India the dubious honor of topping the global list of fatalities from road crashes.¹ India has one of the highest road accident rates in the world. The Maharashtra state has highest number of registered vehicles in the country and contributes 11.5 per cent of road accidents in the country.²

Each year road traffic injuries take the life of 1.2 million men, women and children around the world, and seriously injure millions more. The death toll is highest and still growing in low and middle income countries, where pedestrians, motor cyclists and passengers are especially vulnerable.³

In India, the report revealed 4,80,652 road accidents during the current calendar year 2016.⁴ It has been estimated unless immediate action is taken, road deaths will be the fifth cause of death by 2030, resulting in an estimated 2.4 million fatalities per year.⁵

Hence, research carried on Road traffic injuries is a significant topic to layout distinctive safety measures that shall reflect in the form of reducing the percentage of road traffic accidents worldwide.

With this background, the present study was carried out with the following objectives to draw attention to the pattern of injuries in relation to the mode of travel, type of injury, time of injury, place of injury, persons involved, use of safety measures, alcohol influence and blood transfusion required in a road traffic injuries cases admitted at Krishna Hospital and Medical Research Center, Karad.

2. Material and Methods

The present study was carried out among cases of road traffic injuries admitted to Krishna Hospital and Medical Research Center, Karad from 1st June 2016 to 30th July 2016. The study population consisted of 50 cases admitted due to road traffic injuries to the casualty and respective wards. It was a hospital based cross sectional study. Data was collected using pre designed and pre tested proforma for

interviewing the subjects which was specially designed for this purpose. The questionnaire consisted of personal details of the victim admitted, day, place and time of accident, time lag between the accident and hospitalization, the type of vehicle involved, pattern of injury and type of road user involved. It also included alcohol influence and safety measures used. The case files were referred to cross check the data obtained. Informed Consent was obtained from the victim or the relative as well as they were assured confidentiality over the information collected. The patients admitted with delayed complications of road traffic injuries were not included in the study. Maximum information was extracted from the victims admitted, but where the condition of the patient did not warrant interview, the relatives were questioned. The data was summarized using proportion and percentages. Institutional Ethics Committee approval for the study was taken.

3. Results

A total of 50 cases of road traffic injuries admitted to Krishna Hospital and Medical Research Center, Karad were studied.

Table 1: Distribution of Road Traffic Injuries according to age and sex

Age (yrs)	Male No. (%)	Female No. (%)	Total No. (%)
15-29	16 (32)	4 (8)	20 (40)
30-39	11 (22)	0 (0)	11 (22)
40-49	7 (14)	2 (4)	9 (18)
50-59	4 (8)	0 (0)	4 (8)
Above 60	6 (12)	0 (0)	6 (12)
Total	44 (88)	6 (12)	50 (100)

Out of the 50 cases studied, 44 (88%) were males and 6 (12%) were females. Maximum road traffic injury cases 20(40%) were in the age group of 15-29 years followed by 11(22%) in 30-39years of age.

Maximum number of accidents took place in the Rural areas [26 (52%)] while the number was comparatively less in urban areas [24 (48%)].

Table 2: Distribution of Week day of Road Traffic Injuries

Day	No. of cases	Percentages
Monday	7	14
Tuesday	10	20
Wednesday	8	16
Thursday	10	20
Friday	5	10
Saturday	7	14
Sunday	3	6
Total	50	100

Among the weekdays, maximum number of road traffic injuries were found on Tuesdays and Thursdays [10 (20%)] which was followed by Wednesdays [8 (16%)]. Considering the time distribution of injuries it was observed that large number [46 (96%)] of road traffic injuries took place during the day and only 4(4%) took place at night.

Table 3: Distribution of Road Traffic Injuries according to time of the day

Time of the day	No. of cases	Percentage
Morning (7.01am to 12 noon)	8	16%
Afternoon (12.01am to 4 pm)	14	28%
Evening (4.01pm to 7 pm)	15	30%
Night (7.01pm to 7 am)	13	26%
Total	50	100

Out of the 50 cases taken, maximum 15(30%) of road traffic injuries took place in the evening, while 14 (28%) took place in the afternoon and the least 8(16%) took place in the morning.

Table 4: Time lag between the road traffic injuries and hospitalization

Time Lag (In hours)	No. of cases	Percentage
0-1/2	9	18
1/2-1	16	32
1-2	17	34
>2	8	16
Total	50	100

After the occurrence of the accident, the time lag between the accident and hospitalization was also considered. Maximum number of cases i.e. 25(50%) received hospitalization within one hour followed by 17(34%) cases who were hospitalized in 1-2 hours.

Table 5: Distribution of Road Traffic Injuries according to Road Users

Type of Road User	No. of cases	Percentage
Vehicle Driver	32	64
Vehicle Occupant	13	26
Pedestrian	5	10
Total	50	100

Among the victims, majority i.e. 32 (64%) were Vehicle Drivers. Out of them, 23 (71.8%) had a driving license and 9 (21.8%) did not have license. This was followed by 13 (26%) Vehicle occupants and 5 (10%) were Pedestrians.

Table 6: Distribution of Road Traffic Injuries according to Type of vehicle involved

Type of vehicle	No. of cases	Percentage
Bicycle	3	6.67
Motorized Two Wheeler	36	80
Three Wheeler	1	2.22
Four Wheeler	4	8.88
Bullock Cart	1	2.22
Total	45	100

As 5 were Pedestrians, out of the total remaining 45 cases, majority [36 (80%)] of the accidents took place by motorized two wheelers which was followed by four wheelers [4 (8.88%)], Bicycle [3 (6.67%)] and least by bullock cart and three wheelers [1(2.22%)].

Table 7: Distribution of Road Traffic Injuries according to type of road crash

Type of road crash:	No. of cases	Percentage
Head on collision	20	40
Side collision	13	26
Skidding of vehicle	8	16
Fall from Vehicle	6	12
Others	3	06
Total	50	100

Head on collision was found in 20 (40%) i.e. maximum number of cases, side collision in 13 (26%) cases, skidding of vehicle in 8 (16%) of cases, fall from vehicle in 6 (12%) of cases and other collision included 3 (6%) cases.

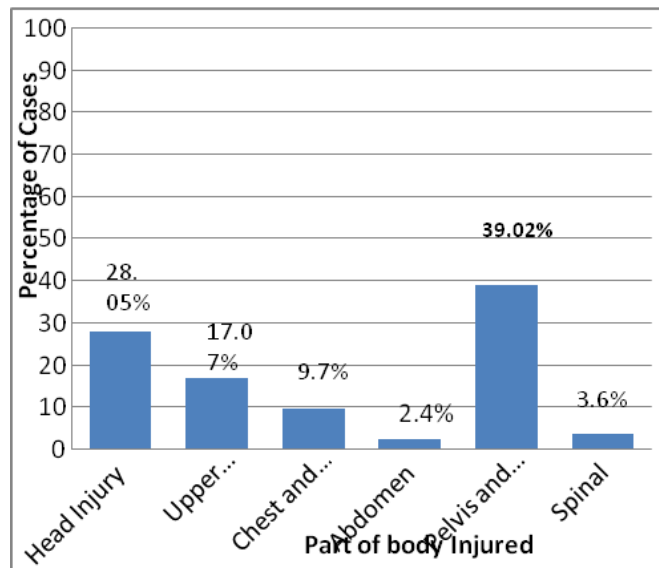


Figure 1: Distribution of Road Traffic Injuries according to part of the body affected

Multiple injuries were seen in victims and amongst them, pelvis and lower limbs were most commonly injured in 39.02% of cases which was followed by head injury in 28.05% of cases.

Safety Measures like use of helmet and seatbelts were also assessed. Majority of the patients i.e. 45 (95%) did not use any safety measures and only 5 (5%) used them.

Alcohol influence was also questioned. It was found that 7 (14%) cases were under influence of alcohol.

Requirement of blood transfusion for the severity of the injuries was also checked. Blood transfusion was required in 25(50%) of the cases which indicated that these patients had severe injuries.

4. Discussion

A total of 50 cases were studied in Krishna Hospital and Medical research center in the time period of two months.

In our study, the younger age group of 15-29 years was the most vulnerable fatalities. Whereas, some studies found the age groups most commonly involved were 16-30 years⁶ and 15-35years⁷. Also study conducted by Dalbir Singh et al

showed majority involvement of the age group 16-18 years.⁸ Males are more prone than females in road traffic injuries.^{6,9} The gender difference is probably related to both exposure and risk taking behavior. There is a significant difference in occurrence of road traffic accidents on days of week. Mehta SP from Delhi has reported that road traffic accidents are more common on Saturdays.¹⁰ More than 50% of the weekly traffic injuries occur on Friday, Saturday and Sunday, with a high peak on Saturday because so many people have leave for weekends.¹¹ In our present study 14% of road accidents occurred on Monday and Saturday with least on Sunday that is 6% where as maximum occurrence 20% were on Tuesday and Thursday. The reason is probably due to large number of people leave for work on weekdays, increasing the traffic load and contributing to road traffic accidents.

Findings of the present study revealed that 30% of casualties took place in the evening following 28% casualties during the afternoon. This may be because of people travelling back from office, children going to school or returning from school and several commercial enterprises are opened.

Our study showed, 50% cases had time lag between the accident and hospitalization, of one hour followed by 34%cases who received hospitalization in one to two hours. This period is regarded as a golden hour period. It is very crucial to save the life of the patient.

The present study found 64% were drivers followed by 26% to be occupants & 10% Pedestrians. But in the study of Dalbir Singh et. al, highest number of fatalities were found among pedestrians (47.6%) followed by occupants (43.5%).⁸ Motor cyclist accident, in the present study, constituted to majority i.e.82% of the road collisions, 8% were of four wheelers which was followed by 6% of bicycle. Also bullock cart and three wheelers constituted around 3%. Motor cyclist accidents were found to be the highest contributor in the study that was similar to the result of the study conducted by Dr.D. Rao et. al in Pune constituting majority 41.73% of the accidents due to motor cycles.³ Collision with another vehicle was the cause of crash in 61.1% of the crashes and vehicle skidding was responsible for 22.3% of the crashes as reported by Rakhi Dandona et al which is similar to the present study consisting 66% of collisions and 16% cases of skidding.¹² This could be because of application of sudden brakes, some people get lost in their thoughts while driving, distractions while driving, poor light on roads etc.

Injury to the head and neck region of the body was responsible for majority of the fatalities(81.4%) followed by multiple region injuries(10.9%) in the study of Dalbir Singh et al whereas in the present study where 95% of the patients had pelvis and lower limbs injuries followed by 28.05% head injury.⁸ Similar result was found in the Kanpur study where maximum number of cases were of head injuries.¹³

In our study, alcohol abuse was prevalent. History of alcohol intoxication was obtained from patients themselves or the relatives.14% of the vehicle drivers were under the influence of alcohol whereas in a study conducted by Supriya Satish Patil et al. alcohol influence was found to be 29.5%.¹⁴Blood

transfusion required by the patients were 50% that reflects the magnitude of the fatality and morbidity. Only 5% cases had used a safety measure which alarms a warning of seriousness of taking precautions on roads and arranging an awareness program to reindulcate road traffic rules and regulations and its safety in the population.

5. Conclusion

Road traffic injuries are certainly an issue of concern and serious problem to stress on. A significant number of road traffic injuries can be prevented and lot of lives can be saved if proper safety measures are used, alcohol use is avoided, traffic rules and laws are followed.

References

- [1] https://www.nhp.gov.in/road-traffic-accidents_pg. National Health Portal India. Road Traffic Accidents.
- [2] Pasricha PS. Road accidents management strategies. Road safety—A book of readings, Centre for road safety. Central Institute of Road Transport, Pune, India. 1997.
- [3] Rao D, Mukerjee S. A study of pattern of injuries in road traffic collisions. J Punjab Acad Forensic Med Toxicol. 2010 Jun 1;10:14-6.
- [4] www.morth.nic.in. Government of India Ministry of Road Transport & Highways Transport Research Wing New Delhi. Road Accidents In India-2016(accessed on September, 2017).
- [5] Jaiswal K, Kumar S, Sant SK, Singh AK, Kumar A, Singh A. Injury pattern of road traffic accident cases in a rural hospital of central Uttar Pradesh. International Journal of Medical Science and Public Health. 2015 Oct 1;4(10):1347-50.
- [6] Sathiyasekaran BW. Study of the injured and the injury pattern in road traffic accident. Indian Journal of Forensic Sciences. 1991;5:63-8.
- [7] Dhingra N, Khan MY, Zaheer M, Sinha SN, Khan A, Dhingra M. Road traffic management-A national strategy 1991. In Proceedings of the International Conference on Traffic Safety 1991 Jan (Vol. 27, p. 30).
- [8] Singh D, Singh SP, Kumaran M, Goel S. Epidemiology of road traffic accident deaths in children in Chandigarh zone of North West India. Egyptian journal of forensic sciences. 2016 Sep 1;6(3):255-60.
- [9] Jha N, Srinivasa DK, Roy G, Jagdish S. Injury pattern among road traffic accident cases: A study from South India. Indian J Community Med. 2003 Apr 1;28(2):84-90.
- [10] Mehta SP. An epidemiological study of road traffic accident cases admitted in Safdarjang Hospital, New Delhi. Indian Journal of Medical research. 1968;56(4):456-66.
- [11] Odero W, Garner P, Zwi A. Road traffic injuries in developing countries: a comprehensive review of epidemiological studies. Tropical Medicine & International Health. 1997 May 1;2(5):445-60.
- [12] Dandona R, Kumar GA, Ameratunga S, Dandona L. Road use pattern and risk factors for non-fatal road traffic injuries among children in urban India. Injury. 2011 Jan 1;42(1):97-103.

[13] Gupta AK, Nath R, Rastogi S, Shukla RK, Kumar V. Epidemiological Study Of Injured Patients Admitted In Medical College Hospital Kanpur. Indian Journal of Orthopaedics. 1994 Sep 1;28(3):61.

[14] Patil SS, Kakade RV, Durgawale PM, Kakade SV. Pattern of road traffic injuries: A study from western Maharashtra. Indian journal of community medicine 2008 Jan;33(1):56.

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