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Original Article

Study of Epidemiological Factors Associated with Road Traffic Accident in Patients Admitted in Surgery Wards in a Tertiary Care Centre in Vindhya Region

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Abstract

Introduction: India is passing through significant urbanization, motorization, industrialization and a change in socioeconomic values. Due to these changes, road traffic accidents (RTA) have become the first public hazard in the world which results in one of the largest threat against human lives and safety. The aim of the study was to study demographic variables and epidemiological determinants associated with RTAs.

Materials and Methods: The study was conducted in patients of trauma due to RTA who were admitted in surgical wards through surgical Outpatient Department and/or Causality Department, S.G.M Hospital, Rewa, Madhya Pradesh in the Vindhya Region from 1st August 2015 to 31st July 2016.

Result: It was observed that maximum cases occurred during summer (37.36%), the most common age group was 20-30 years (31.35%). Males were most common of the victims and age group of 21-30 years was most commonly affected. Most of the RTA patients were students (27.56%). Majority of accidents occurred in evening hours, i.e., 4-8 pm (39.22%). Maximum accident occurred on the road (67.62%), while moving object dashing on traveling victim in (43.84%) cases. Most of the patients were driving the vehicle (46.9%) when the accident occurred.

Conclusion: Road traffic injuries are a major but neglected public health challenge that requires concerted efforts for effective and sustainable prevention. Strict enforcement of traffic laws is the need of the hour.

Keywords: Epidemiology, Road traffic accidents, Trauma

INTRODUCTION

India is undergoing major economic and demographic transition coupled with increasing urbanization and motorization. Among the top 10 causes of mortality in the country, road traffic accident (RTA) was the 10th cause two decades back, but with the increasing urban expanse and lifestyle changes, it is projected that RTAs will occupy the fifth position in the list of major killers and third position among causes of disease burden in 2020.[1]

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It is projected that RTA will be the second most common cause of disability-adjusted life years in India in the year 2020.[2] Road traffic injuries are only public health problem where young people are most affected. Today RTAs have emerged as a major cause of morbidity and mortality.[3] Around the world, the statistics are staggering.

Road traffic injuries cause considerable economic losses to victims, their families, and to nations as a whole. These losses arise from the cost of treatment (including rehabilitation and incident investigation) as well as reduced/lost productivity (e.g., in wages) for those killed or disabled by their injuries, and for family members who need to take time off work (or school) to care for the injured.

Accidents, tragically, are not often due to ignorance but are due to carelessness, thoughtlessness and over

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confidence. Haddon[4] (Head of Road Safety Agency in the USA) has pointed out that road accidents were associated with numerous problems each of which needed to be addressed separately. Human, vehicle and environmental factors play roles before, during and after a trauma event. The aim of conducted study was to study demographic various factors and causes associated with RTAs.

MATERIALS AND METHODS

The proposed study was conducted in patients of injury due to RTA who were admitted in surgical wards through surgical Outpatient Department and/or Causality Department, S.G.M Hospital, Rewa, Madhya Pradesh from 1st August 2015 to 31st July 2016. Patients of trauma who were primarily treated and or resuscitated in peripheral hospitals, clinics and transported by 108 ambulance services or came by own vehicle or admitted in a different department like orthopedics, due to associated injury or major complaints of their discipline and or later transferred to surgical wards. History regarding accident was recorded from the victim, if conscious, if not, then those who accompanied the patient to the hospital or paramedical staff of ambulance services or policeman accompany.

Detailed history of the patient was then recorded regarding whether he/she was a pedestrian or was traveling on a vehicle or driver himself/herself and if so then what was his/her position on the vehicle at the time of accident, It was also enquired about details of the accident in relation to date, time, place, mode of injury, cause of injury, cause of accident, and vehicle involved and analysis which part of body commonly affected after proper resuscitation.

RESULT

This study was conducted in 1081 patient admitted in Surgery Ward of Department of Surgery, Shyam Shah Medical College and Associated Sanjay Gandhi Memorial Hospital, Rewa, Madhya Pradesh during the study period of 1st August 2015-31st July 2016.

Table 1 depicts association of seasonal variation with RTA. Out of 1081 cases, the maximum cases occurred during summer (37.36%), followed by winter (35.59%) and rainy season (27%); maximum incidence of RTA was recorded in the month of March, 143 (13.22%) and November, 118 (10.91%). The minimum incidence of RTA was in the months of August, 57 (5.27%) and October, 61 (5.64%), respectively.

Figure 1 depicts the most common age group was 21-30 years 339 (31.35%). Next common age group was 31-40 years 228 (21.02%). Third common age group was 11-20 years 192 (17.75%). Male were common victim. Male to female ratio was about 4.78:1.

Table 2 depicts in RTA majority of patients were students 298 (27.56%). Next common affected RTA patients were laborer 139 (12.85%) and then farmer 129 (12.85%).

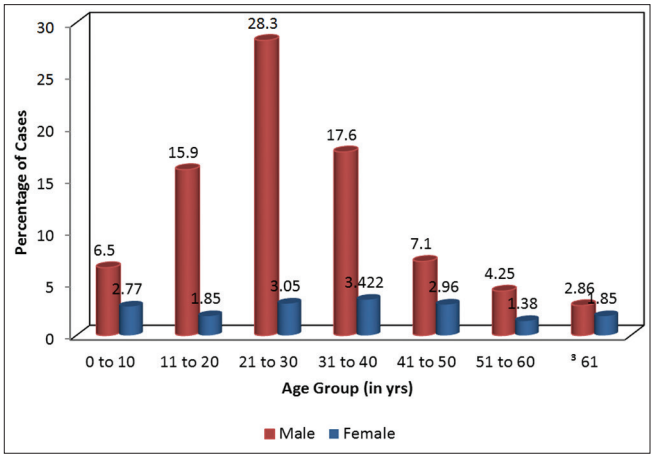

Figure 1: Age and sex wise distribution of patient of road traffic accident

Table 1: Distribution of cases according to seasonal variation

Season	Month	*n* (%)	Total
Summer	March	143 (13.22)	37.36
(*n*=404)	April	117 (10.82)	
	May	68 (6.29)	
	June	76 (7.03)	
Rainy	July	109 (10.08)	27
(*n*=264)	August	57 (5.27)	
	September	65 (6.01)	
	October	61 (5.64)	
Winter	November	118 (10.91)	35.59
(*n*=385)	December	87 (8.04)	
	January	94 (8.69)	
	February	86 (7.95)	
	Total	1081 (100.0)	100

Table 2: Distribution of cases according to occupation

Occupation	*n* (%)
Student	298 (27.56)
Laborer	139 (12.85)
Farmer	129 (11.9)
Job	119 (11)
House wife	116 (10.7)
Businessman	72 (6.6)
Driver	69 (6.38)
Children	43 (3.97)
Cleaner	12 (1.11)
Others*	84 (7.77)
Total	1081 (100.0)

*Beggers, unkown, vendor, etc.,

Table 3 depicts in RTA maximum accidents occurred on the road (67.62%), next common place of accident is on the turning of the road (19.05%), and crossing (10.26%).

Table 4 depicts that in RTA majority of accidents occurred in evening hours 4-8 pm 424 (39.22%), followed by 6-10 am 304 (28.12%). Least number of accidents were reported in midnight 8 pm-6 am 155 (14.33%).

Table 5 depicts that in RTA drivers were most commonly involved and injured in the accident 507 (46.9%). The second most common group was of passengers who were injured 340 (31.45%). Pedestrian was involved in 234 (21.64%) cases.

Figure 2 depicts maximum cases in that patient hit by moving object dashing on traveling victim 474 (43.84%). Next common group was patient who had an injury due to fall from vehicle 307 (28.39%). Third common group was patients who had an injury due to victim dashed on opposite stationary object in 157 (14.52%) cases. Injury due to turning of the vehicle occurs in 115 (10.63%) cases.

Table 6 depicts that in RTA that motorcycle 442 (32.9%) was the most common vehicle involved in RTA, followed by jeep 279 (20.8%) and truck 228 (17%).

Table 7 depicts in RTA maximum patients had mixed type of injury. Out of 1081 patients, the maximum patient has head and neck 914 (84.55%) was most commonly injured in RTA patient. Lower limb was involved in 325 (30.06%) cases, and chest was involved in 236 (27.56%) cases.

DISCUSSION

In this study, the most common age group was 21-30 years (31.35%). Next, common age group was 31-40 years (21.02%). Males were involved more commonly (82.7%) as compared to female (17.29%). Roy *et al*.[5] 2012 majority

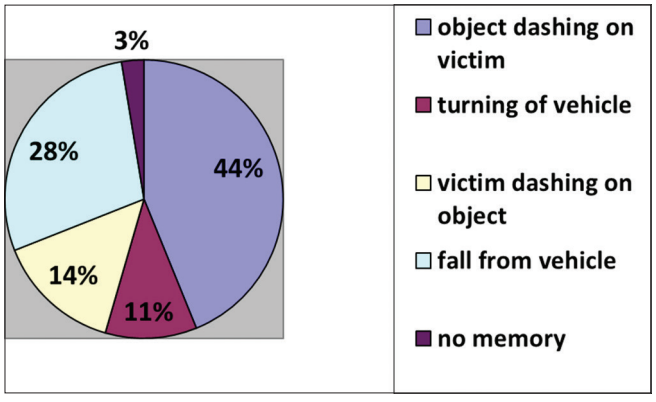

Figure 2: Distribution of cases according to cause of injury

Table 3: Distribution of cases according to place of accident

Place of accident	*n* (%)
Road	731 (67.62)
Turning	206 (19.05)
Crossing	111 (10.26)
Bridge	30 (2.77)
Ghat/valley	03 (0.27)
Total	1081 (100.0)

Table 4: Distribution of cases according to time of accident

Time of accident	*n* (%)
6-10 am	304 (28.12)
10 am-4 pm	198 (18.31)
4-8 pm	424 (39.22)
8 pm-6 am	155 (14.33)
Total	1081 (100.0)

Table 5: Distribution of cases according to situation of victim

Type of victim	*n* (%)
Passenger	340 (31.45)
Driver	507 (46.9)
Pedestrian	234 (21.64)
Total	1081 (100.0)

Table 6: Distribution according to type of vehicle in use

Vehicle type	Victim vehicle	Opposite vehicle	Total
	n=757 (%)	*n*=584 (%)	*n*=1341 (%)
HMV			
Bus	27 (3.56)	49 (7.53)	71 (5.2)
Truck	42 (5.54)	186 (31.89)	228 (17)
Tractor	18 (2.37)	7 (1.19)	25 (1.8)
LMV			
Jeep	135 (17.83)	144 (24.65)	279 (20.8)
Car	21 (2.77)	26 (4.45)	47 (3.5)
Auto rickshaw/ tempo	13 (1.71)	16 (2.73)	29 (2.1)
Motorcycle	304 (40.15)	138 (23.63)	442 (32.9)
Scooter	65 (8.58)	6 (1.02)	71 (3.5)
Moped	16 (2.11)	6 (1.02)	22 (1.6)
Bicycle	116 (15.32)	11 (1.88)	127 (9.4)
Total	757 (100)	584 (100)	

HMV: Heavy motor vehicle, LMV: Light motor vehicle

Table 7: Distribution of cases according to body part affected (*n*=1081)

Body part affected	*n* (%)
Head and neck	914 (84.55)
Lower limb	325 (30.06)
Upper limb	236 (21.83)
Chest	298 (27.56)
Abdomen	84 (7.77)
Back	55 (5.08)
Pelvis	42 (3.88)

of the RTA victims were in the age group of 18-40 years (84.7%). Out of the total cases, 88.9% were males, and 11.1% were females. Mitra *et al*.[6] 2013 observed that a maximum number of victims were between 11 and 40 years of age constituting 127 (63.5%).

In this study, the maximum cases occurred during summer (37.36%) followed by winter and rainy season 35.59% and 27%, respectively. Jha and Agrawal[7] in their RTA cases study maximum (14.5%) cases were reported in the month of July followed by January.

In this study, the majority of patients were students (27.56%). Next, common affected RTA patients were laborer (12.85%) and farmer 11.9%. Jha and Agrawal[7] in their RTA cases study laborers constituted largest group (27.6%) followed by students (24.1%).

The maximum accidents occurred on the road (67.62%), then during turning of the road (19.05%), and crossing (10.26%) of the road. Vinodrajan[8] found that the accident occurred on roads (68.07%), followed by turning (17.65%), and crossing (10.36%). Raman Gupta[13] (2010) most common accident occurred on roads (76%), followed by turning (9.44%).

The majority of accidents occurred in evening hours 4-8 pm (39.22%). Least number of accidents was reported in midnight (14.33%). Pathak[9-11] most cases occurred between 6 and 10 pm. Singh *et al*.[10] (2009). most of the accidents had taken place in the evening hours (6 pm - 12 midnight).

In this study, the most of the patient were driving the vehicle (46.9) when the accident occurred. Next, the common group was of passengers (31.45%). Pedestrian was involved in (21.64%) cases. Motorcycle (32.9%) was the most common vehicle involved in RTA, followed by jeep 20.8% and truck 17%. Jha *et al*.[11] in their epidemiological study of RTA cases from South India have shown that the vehicle occupants constituted the large group (45%) of the victims. Singh *et al*.[10] (2012) majority of the victims 41.52% (514) were two wheeler occupants. Occupants of heavy motor vehicles accounted for 9.8% of the victims. Roy *et al*.[5] cases around 45.8% were drivers by occupation. Harnam and Dhattarwal[12] in their study of the pattern of injuries in fatal RTAs Heavy Vehicles were most common offenders (38.9%) followed by cars and jeeps (30.4%).

In this study, in maximum cases patients were hit by moving object dashing on traveling victim (43.84%). Next, common group was patient who had an injury due to fall from vehicle (28.39%). The third common group was patients who had an injury due to victim dashed on opposite stationary object in (14.52%) cases. Injury due to turning of the vehicle occurred in 10.63%. Gupta[13] study the most common cause of injury was a moving object dashing on victim (40.83%). Next, common they had an injury due to turning the vehicle in 23.89% cases. In 17.5% cases, the victim had an injury as he dashed on stationary object. In 16.11% he had an injury due to fall from the vehicle.

In this study, the maximum patient head and neck (84.55%) was most commonly affected in RTA patient. Lower limb was involved in (30.06%) cases. Chests were involved in (27.56%) cases. Jha and Agrawal[7] shows in RTA head injuries (34.1%) and limbs and the face were the commonly affected areas to suffer external injuries. Harnam and Dhattarwal[12] in his study head injuries were seen in 77.6% of cases.

CONCLUSION

It is concluded that RTA pose the greatest threat to humanity, not only because of the toll but also in terms of disability, deformity and loss, further aggravating agony, need to be eliminate such agony by the implementation of education and training among public, medical personnel and administration.

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