

An Epidemiological Study of Road Traffic Accident Cases Attending a Tertiary Care Hospital

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ABSTRACT

Introduction: Road traffic accidents are a major global health problem. Incidence of road traffic accidents can be minimized by applying safety measures and following strict traffic rules and regulations. **Aims:** The main purpose of our study was to find out the socio-demographic profile of the victims involved in road traffic accidents and to provide epidemiological data. **Methods:** This is a hospital based, cross sectional study with victims of road traffic accidents attending to Nepalgunj Medical College, Kohalpur, a tertiary care center. Consecutive patients of road traffic accidents attending emergency department or admitted in wards (surgery, orthopedic or neurosurgery) were taken and information of injury pertaining to epidemiological factors and demographic profile along with time of occurrence of accident, type of vehicle involved, the pattern of injury, site of accident and part of body involved was collected on a pre-designed proforma. **Results:** Total patients enrolled in the study were 410. Majority of victims were young with age group of 10-19 years (18.5%). By gender male were more affected than female (67.8% versus 32.2%). Incident was more among married couple (61%). Majority belongs to Hindu by religion (96.1%). Regarding educational level majority have attained school level education (46.8%). By occupation majority were students (36.1%) followed by private employee (16.6%). Most of road traffic accidents were happened during summer season (65.4%). Regarding time most accidents were in between 6 PM-10PM. Major site of accident was highway (63.4%). Among vehicle involved 4 wheelers were more common (65.4%). Head, neck and face region was found mostly injured in this study (33.2%). Most common type of injury was abrasion (30.7%) then followed by laceration (26.3%). **Conclusion:** Road traffic accidents can be minimized and it's fatal consequences also preventable by strict enforcement of traffic rules and applying safety measures.

Keywords: Highway, Injury, Road traffic accident, Vehicle

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INTRODUCTION

Traffic accidents account for the majority of accidental deaths worldwide. Accident as per definition of World Health Organization defined as unpremeditated event resulting in recognizable damage.¹ Worldwide, approximately 1.2 million people die annually from road traffic accident (RTA) and another about 50 million suffer from non-fatal injuries. RTA related injury and trauma is also common in Nepal.^{3,4,5} Increase in country population and proportional increase in use of motor vehicles has led to rise in the number of road related accidents, injuries and fatalities. Data from Nepal showed that increase in population by 15% from 23.3 million in 2001 to 26.6 million in 2011, while vehicle registration from 317 284 in fiscal year 2000-2001 to 1348 995 in 2011-2012, a rise of 325% in the same decade.⁶ The development in road has not done at the same proportion of vehicle growth which directly resulted in an over burdening of these roads and increase the possibilities of RTA related injuries. Several other factors contribute to RTA like

human, vehicle and environmental factors. Identification of the most probable factors that affect the occurrence of accidents is essential for effective road traffic accident prevention. This study is aimed at ascertaining the socio-demographic profile and pattern of injuries in victims of RTA attending this tertiary care center.

METHODS

The present study was a hospital based, cross sectional study with victims of road traffic accidents attending Nepalgunj Medical College, Kohalpur, a tertiary care center admitted for at least 24 hour in hospital. A road traffic accident was defined as accident which took place on the road between two or more objects, one of which must be any kind of a moving vehicle. Study was conducted at departments of Emergency, Surgery, Orthopedic and Neurosurgery from period of December 2020 to November 2021. Complete history was taken from the patient, attendant and case sheets, at emergency or ward. The information of injury pertaining to epidemiological factors and

demographic profile along with time of occurrence of accident, type of vehicle involved, the pattern of injury, site of accident, and part of body involved was collected on a pre-designed proforma. Ethical approval was taken from Institutional review committee (IRC) and written informed consent was taken from each patient. Exclusion criteria include victims of road traffic accidents admitted for less than 24 hours, cases treated on outpatient basis and not admitted into hospital, victims who were immediately referred to higher center, In case of unconscious patient and if the family members are not willing to participate and cases which immediately prepared for surgical intervention.

Statistical analysis

Data collected in structured proforma were entered in Microsoft Excel 2007 and statistical analysis done with SPSS 20 software. The data thus obtained from this study were analyzed statistically by presenting the data in the form of appropriate tables and for descriptive data analysis number and percentage was calculated.

RESULT

Majority of victims belongs to age group of 10-19 years. Majority were male. Most of victims were from rural area. By religion majority were Hindus with joint family. Regarding education level majority have completed school level education. Most of victims belongs to student group.

Age(years)	Frequency	Percent
1-9	40	9.8
10-19	76	18.5
20-29	62	15.1
30-39	68	16.6
40-49	64	15.6
50-59	40	9.8
>= 60	60	14.6
Sex		
Female	132	32.2
Male	278	67.8
Residence		
Rural	268	65.4
Urban	142	34.6
Marital Status		
Married	250	61
Single	160	39
Religion		
Buddhist	2	0.5
Christian	12	2.9
Hindu	394	96.1
Muslim	2	0.5
Family		
Joint	348	84.9
Nuclear	62	15.1

Education level		
Graduate	72	17.6
Illiterate	36	8.8
Intermediate	110	26.8
School	192	46.8
Occupation		
Business	34	8.3
Dependent	38	9.3
Farmer	46	11.2
Govt.Employee	30	7.3
Labourer	46	11.2
Private employee	68	16.6
Student	148	36.1

Table I: Socio demographic characteristics of the victims (Total 410)

Higher proportion of accidents were reported during summer season. Regarding time period in a day most of accidents were in between 6 PM-10 PM and majority were happened at highway.

Season	Frequency	Percent
Rainy	98	23.9
Summer	268	65.4
Winter	44	10.7
Time		
6 AM - 12 PM	50	12.2
12 PM - 6 PM	90	22
6 PM - 10 PM	208	50.7
10 PM - 6 AM	62	15.1
Site of accident		
Highway	260	63.4
Lanes	46	11.2
Road	104	25.4

Table II: Season, time and site of accident

Type of vehicle involved	Frequency	Percent
2 wheelers	62	15.1
3 wheelers	80	19.5
4 wheelers	268	65.4

Table III: Type of vehicle involved

Regarding part of body, head, neck and face was injured among majority and most common type of injury was abrasion.

Part of body	Frequency	Percent
Abdomen and pelvis	60	14.6
Head, neck and face	136	33.2
Lower extremity	86	21
Poly trauma	2	0.5
Thorax	30	7.3
Upper extremity	96	23.4
Type of injury		
Abrasion	126	30.7
Avulsion	24	5.9
Contusion	42	10.2
Crush injury	26	6.3
Dislocation	10	2.4
Fracture	74	18
Laceration	108	26.3

Table IV: Part of body involved and type of injury

DISCUSSION

Road traffic accidents (RTAs) are increasing day by day due to urbanization and tremendous growth in road transport sector. Vander sluis et al has reported that severe injuries and three quarters of severely injured cases who died during hospitalization are victims of traffic accidents.⁷ Since accidents are multi-factorial, epidemiological techniques are especially useful for their study and control. In the present study, a total of 410 cases of road traffic accidents (RTA) have been studied. In this study majority of victims were in age group of 10-19 years 18.5% and followed by 30-39 years 68%. Khare et al reported 16-31 years and Solanki et al reported majorities were below 15 years.^{8,9} The younger age groups in this study largely consisted of students found more liable for RTA as they might have lack of knowledge of road traffic safety precautions, have to use frequent public transport or walk and their activities require them to travel more than the older demographics. The majority of the victims were males (67.8%) in the present study. Similar observations were reported in studies done by Khare et al and Agarwal et al and where male victims accounted for 84% and 82.5% respectively.^{8,10} Male preponderance could be due to the fact that male have to earn for family and have frequent outdoor visits. Other contributing factors might be negligent driving or riding and breaking traffic rules and regulations. In our study, in contrast to Chandra et al¹¹, majority of victims belongs to rural area 65.4% as compare to urban 34.6%. Rural population is less exposed to motor vehicles and also lack of traffic knowledge make them more prone for RTA. In present study majority (61%) of victims were married residing in joint family and Hindus by religion (96.1%). Similar observations was also reported by other studies too.^{10,12} Regarding educational level most of the victims in our study were school going (46.8%) followed by intermediate level (26.8%) and least in illiterate (8.8%). Higher number of RTA among school going students was also reported by Mishra et al.¹³ However the relationship between education and RTA may not be causal but special attention needed in this age group

regarding learning them traffic rules, using helmets, seat belts while sitting or riding vehicles. Regarding occupation, majority of the subjects were students (36.1%) followed by private employee (16.6%). Agarwal et al also reported in his study that higher number of road traffic injuries were among students. The present study showed majority of RTA were held during summer season (65.5%) followed by rainy season (23.9%). Our finding is comparable with other studies conducted by Sreekanth et al and Jha S et al.^{14,15} Summer season is season for marriage, school vacation, harvesting and marketing of grains which increases outdoor visit more often. In rainy season accidents can happen due to slippage on the wet roads, poor road condition and poor visibility. In this study, regarding time period, most of accidents were occurred in between 6 PM-10 PM (50.7%). Our finding is consistent with study done by Sreekanth et al and Singh et al.^{14,16} During evening time volume of vehicles in road is high and this time is also returning home from jobs and also poor lighting conditions in our most of roads, all contribute increasing incidence during this time period. In our study most of RTA were occurred on the highways (63.4%) followed by on road (25.4%) and lanes (11.2%). These findings are consistent with the findings of other authors.^{17,18} The reason for this could be that most of the time the highways are busy with speeding vehicles especially during peak hours, presence of single space roads, overtaking, and volume of traffic. As regard type of vehicle involved, four wheelers occupied the highest rate of RTA in our study (65.4%) which is comparable to study conducted by Eke et al.¹⁹ In this study most of the external injuries were found on the head, neck and face (33.2%) followed by upper extremity (23.4%) and lower extremity (21%). Abrasions were the commonest type of external injury. These findings are consistent with finding by Farooqui et al.²⁰ Head, neck and face region are most exposed part of body and also not using safety measures like wearing helmets, seatbelts also contribute to injuries to these sites.

LIMITATIONS

The current study has some limitations. This is a single hospital based cross sectional study hence results of this study cannot be generalized to general population. Final outcome of injured victims were not followed also influence of alcohol or drug intake was not investigated.

CONCLUSION

Road traffic accidents are a huge public health problem. Incidence of RTA and its related morbidity and mortality can be minimized by increasing community participation, planning sufficient transport systems and imparting education and knowledge of traffic rules at school and college levels. Strict enforcement of laws regarding driving of vehicles, following safety measures like ,wearing of helmets, applying seat belts and alcohol or drug consumption during driving are needed. In addition to this, improvement of quality of roads and strict enforcement of traffic rules and regulations also needed.

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