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REVIEWED

Profile of the road accident cases admitted to a government Trauma Center in Kathmandu.

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ABSTRACT

Background: Accidents are generally defined as unexpected, unplanned occurrences or events that may cause injuries. The objectives of this study were to identify the epidemiological features of road traffic accidents among patients attending the trauma center, in Kathmandu.

Methods: A descriptive mixed method for the study was applied to both qualitative and quantitative methods. The study was conducted from January to December, 2019 among 267 road traffic accident cases attending emergency and orthopedics wards during the study period by using semi-structured and five in-depth interviews. The convenience sampling technique was used. The relation between dependent and independent variables was shown by using the chi-square test. P-values less than 0.05 were considered statistically significant throughout the analysis in this study. The statistical analysis was done by using SPSS software version 16.0. Thematic analysis was done for In-depth interview data and appropriate verbatim was developed.

Results: Among 267 subjects, most of the subjects i.e., 140(52.4%) were in the median age group (31-45 years), 192(71.9%) were male, and 183(68.5%) were from the Hindu religion. A road traffic accident was involved in 174(65.2 percent) two-wheelers vehicles, 155(58.1%) inside Kathmandu and 152(56.9 percent) time of accidents during office time .Accidents are impacted by education status for not obeying the traffic rules p-value (0.045), the relation of occupation with Drinking in driving time p-value (0.044), caste with drinking in driving time p-value 0.024

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and place of
an accident with time to reach hospital p-value (0.00).

Conclusions: Road traffic accident is one of the public health issues in Kathmandu, Nepal. The most common factors were found that over-speed, not obeying the traffic rules, and use of the mobile phone during driving time. The government in coordination with the private sector should implement preventive measures for reducing such problems.

Keywords: Emergency; Epidemiology; Road traffic accident; Trauma

INTRODUCTION

Accidents are generally defined as unexpected, unplanned occurrences or events that may cause injuries or deaths[1]. Accidents have their natural history and follow the same epidemiological pattern as any other disease i.e., the agent, the host and the environment interacting together to produce injury or damage[2]. Currently ranked ninth, Road traffic accidents (RTAs) are predicted to be the fifth leading cause of death in 2030[3]. Road traffic accident is the public health problem influencing negatively on the wide range of outcomes including disability-adjusted life year, life expectancy, the burden for both families and society, ultimately hindering the achievement of SDG 3; target 3.6[4,5]. RTAs in the context of Nepal have been under-acknowledged and researched leading to scarce of evidence to inform the policy[6]. This study aimed to identify the epidemiological features of road traffic accidents among victims, who were attending the trauma center, Kathmandu.

METHODS

The descriptive mixed method study including both quantitative and qualitative method was performed at the trauma center, Kathmandu. The study was conducted from January to December 2019 among 267 RTAS cases attending an emergency and orthopedics ward during the study period by using structured and in-depth interviews. Trauma center was selected conveniently whereas census method was applied while collecting data from the participant.

The study participants for the interviews were from different sociodemographic characteristics who were enrolled in Interview In a qualitative study, we conducted five in-depth interviews among injured hospitalized participants. Data were collected in separate ward of the hospital that gives optimum privacy. All information was recorded using a voice recorder and notes were taken. Data from IDI were transcribed verbatim from the audio record in the Nepali language and translated later

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into the
English language. The data was then analyzed manually and computerized to maintain consistency. Collected data were entered in epi data and data were exported to Statistical package for social science (SPSS) version 16.0. And qualitative data was managed by using the MS word 2016 software. Thematic analysis was done for IDI data and appropriate verbatim was developed. The Study variables were independent and dependent where the independent variable contains the demographic factors, vehicles factors and environmental factors. The dependent variables contain the road traffic accident. All road traffic accident cases coming to outpatient basis and emergency department were included in the study.

Ethical clearance was received from the faculty of public health of little Buddha college of health science, the Institutional Review Committee of National academy of medical science (Reg. no.946), the Ethical review board of Nepal health research council (Reg. no.298), and verbal and written consent were taken from the respondents mentioning the objectives of the study purpose making them feel free to either participate in a study or not. The tools were, Semi-structured questionnaire was being used for quantitative data and also used secondary data from hospital records and In-depth Interview, guidelines were used for qualitative information whereas the technique was face to face semi-structured interview was used as data collection.

RESULTS

A total of 267 accident respondent was included in the study out of which most of the study participants 140(52.4%) were in age groups 31-45 years. (Median age 27 and SD 15.747). RTAS cases according to sex were male 192 (71.9%) followed by female 75 (28.1%) and the ratio was 2.6:1. RTAS cases according to the ethnic group were janajati i.e. 113(42.3%) and Brahmin/Chettri 92(34.5%). Hindus and Buddhist religions were the most common i.e., 183(68.5%) and 77(28.2%) respectively. (Table 1)

Five participants (Three males and two females) were included in IDI. The mean age of the participants was 36.4 years. The youngest subject was aged 22 and the oldest was aged 42. The patient age groups in this study were between 22 and 42 years and most of the RTAs had occurred in this age group. Most of the participants were male (Table 4).

The experience of the participants showed that the environmental, human, and vehicle factors were the major causes of the road traffic accident." Environmental factors"

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included
road conditions (such as muddy roads, slippery road, narrow roads and lack of traffic lights), heavy rain falls.

"Vehicles factors" included break fail, old vehicles, and heavy load. According to this study human factors included drinking in driving time, not obeying the traffic rules and over speed were significant causes of road traffic accidents. Some of the participants were also of the view that driving in stress is also one of the causes of road traffic accidents.

Distribution of RTAS according to the type of vehicle was two-wheeler i.e. 174 (65.2%) followed by four wheelers 69(25.8%) and ambulance 1(0.4%) were involved in the accident. Most common place for the occurrence of RTAs were inside the Kathmandu valley i.e. 155 (58.1%) followed by 112(41.9%) outside of Kathmandu. A maximum number of an accident occurred between 8 AM to 4 PM i.e. 152(56.9%) followed by 4 PM to 24 AM i.e. 93(34.8%). RTAS cases according to the time taken to reach the hospital were less than 30 minutes in most of the instances 149(55.8%) followed by more than 60 minutes 74(27.7%). (Table 2).

According to the participants,
the accident has a significant impact on the physical and mental state of patient family members and their workplace also. Few participants were also view that the mental state of the patient can get changed after the accident and the patient might need regular help of other people in performing their daily activities.

"*There is also a risk of losing existing jobs and difficulty in findings new ones. It imposes additional financial burden/stress of the family members."(*Interview at orthopedics ward) – (Participant 2,33 years old, male, driver).

Road traffic accidents according to driver factors including over speed was 178(66.7%) followed by drinking in driving time 170(63. 7%). According to pedestrian factors included not obeying traffic rules was 181(67.8%) followed by the use of mobile was 172(64.4%). The road traffic accident occurred in road factors were includes the structure of road 219(82%) followed by slipper road 191(71.5%) and the narrow road was 129(48.3%). Road traffic accidents according to vehicle factors included over speed i.e. 204(76.4%) followed by overloaded vehicles 169(63. 3%). Most of the RTAS occurred in conditions of the road and heavy rainfall i.e. 176(65.9%) and 160(59.9%) respectively. (Table 3).

As per the participant's experience it was very difficult task to adapt to the new situation. Such as walking in a wheelchair, walking with sticks and

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need others support. Few participants' co-operations from friends and family members played a major role towards their adaptation.

"*I always think I need a family rather than friends but I realize friends also played a major role to make happy life* "(Interview at orthopedics ward) – (Participant no.5, 22 years old, female, student).

As per the participants they were slowly returning to the normal situation and starting to do their regular activities.

"Now I can go to toilet myself in a wheelchair and able to eat food myself, previously I could not go to the toilet and even eat food myself." – (Participant no. 3, 25 years old, male, student)

Table 1. Distribution of RTAS cases according to their Socio-demographic factors.

Socio- demographic factors N=267	Frequency	Percentage
Age group (Years)		
0-15	5	1.9
16-30	29	10.9
31-45	140	52.4
46-60	54	20.2
60 Above	39	14.6
Sex		
Male	192	71.9
Female	75	28.1
Ethnicity		
Brahmin	92	34.5
Dalit	28	10.5

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Janajati	113	42.3
Madeshi and others	34	12.7
Religion		
Hindu	183	68.5
Buddhist	77	28.8
Others	7	2.6
Education Status		
Less than primary	80	29.9
Primary and higher secondary	54	20.4
Higher than secondary	133	49.7
Occupation		
Government	51	19.1
Private	53	19.9
Student	112	41.9
Business and others	29	10.9
Marital Status		
Married	136	50.9
Unmarried	131	40.1

Table 2. Distribution of Road traffic accident

Distribution of Road traffic accident(N=267)	Frequency	Percentage

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Types of Vehicles	Two wheelers	174	65.2
	Four wheelers	69	25.8
	More than four wheelers	23	8.6
Place of accident	Ambulance	1	0.4
	Inside Kathmandu	155	58.1
	Outside Kathmandu	112	41.9
Time of accident	24AM-8AM	22	8.2
	8AM-4PM	152	56.9
	4PM-24AM	93	34.8
Time taken to reach hospital	Less than 30 minutes	149	55.8
	30-60 minutes	44	16.5
	More than 60 minutes	74	27.7

Table 3 : Road traffic accident according to accident-related factors

Accident-related factors(N=267)		**Frequency**	**Percentage**
Driver Factor	Drinking in driving time	170	63.7
	Over speed	178	66.7
	Laziness	88	33
	No use of helmet &seatbelt	142	52.4
	Use of mobile	97	36.3
Pedestrian	Use of mobile	172	64.4

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Factors	Not obeying traffic rules	181	67.8
	Not knocking the path from the Zebra crossing	131	49.1
Road factors	Structure of road	219	82
	Slipper road	191	71.5
	Muddy road	102	38.2
	Narrow Road	129	48.3
Vehicles factors	Old vehicles	118	44.2
	Overloaded vehicles	169	63.3
	Over speed	204	76.4
	Break fail	94	35.2
Environmental factors	Bad weather	158	59.2
	Condition of road	176	65.9
	Heavy rainfall	160	59.9

Multiple response

Respondent's occupation and caste was significantly association with accident factors drinking in driving time p- value 0.044, p-value 0.024 (Table 4). Place of accident was significantly associated with time to reach hospital p- value 0.001 (Table 5) and education status was significantly associated with not obeying the traffic rules p- value 0.045. Table 6

Table 4: Relation of sociodemographic factors with accident factors

Characteristics	Drinking in driving time		P value
	Yes	No	

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Occupation of respondents			
Government	24(47.1)	27(52.9)	
Private	32(60.4)	21(39.6)	0.044
Study	75(67.0)	37(33.0)	
Business	20(80)	5(20)	
Labour	2(50)	2(50)	
Caste of respondents			
Brahmin/Chhetri	53(57.6)	39(42.4)	
Dalit	25(89.39)	3(10.7)	0.024
Janajati	74(65.5)	39(34.5)	
Madeshi	17 (53)	15(46.9)	

Table 5: Relationship of place of accident with time to reach hospital.

Characteristics	Frequency n=266	Less than 30 minutes	30-60 minutes	More than 60 minutes	P value
Inside Kathmandu	154	135(87.7)	16(10.4)	3(1.9)	
Outside Kathmandu	112	14(12.5)	28(25)	70(62.5)	0.001

Table 6: Relationship of education status with traffic rules

Characteristics	Not obeying traffic rules	P value

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	Yes	No	
Education status of respondents			
Illiterate	10(76.9)	3(32.1)	
Literate	45(67.2)	22(32.8)	
Primary	5(45.5)	6(54.5)	0.045
Secondary	6(46.2)	7(53.8)	
Higher secondary	16(53.3)	14(46.7)	
Above	99(74.4)	34(25.6)	

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DISCUSSION

Human factors like over speed, not obeying traffic guidelines and riding behavior also result in an increased number of road traffic accidents. The growing incidence of road traffic accident are also associated with seasonal variations like rainy season June and July and winter season December and January when an extra wide variety of vehicles are used on the road[7].

This study shows that out of 267 about half of the participants (52.4%) were of age group 31-45 years'. A cross-sectional study conducted in Palpa district of Nepal (50%) were in the age group 21-40 years[4]. A prospective descriptive study showed that the majority of the accident was the age group 15-29 years[9]. This result may be affected by the place of study. This indicated that more people from a younger age group were involved in RTASs, which added a huge burden to the family and society. This study showed that males had a high proportion of 192(71.9%) among total road traffic accident cases. The ratio is 2.6:1. The retrospective observational study done by 2012 (82.5%) of the sufferers were males and the rest (17.5%) were females[2]. The male is more sufferer and was also reported in Europe[10]. This study shows that the most common time duration of accident occurrence was 8 AM to 4 PM 152(56.9%). A retrospective observational study conducted in Bhopal Madhya Pradesh of India, most common time duration of occurrence of RTAS was 6 PM to 12 PM 783(62%)[2]. A hospital-based prospective observational study was conducted at Pondicherry Institute; it is also observed that the majority of the accidents (59%) occurred during day time[11]. A descriptive cross-sectional study conducted in Chitwan, Nepal showed the maximum number of accidents occurred between 12 noon to 12 midnights (79%)[6]. According to the time taken to reach hospital in less than half an hour in this study shows that 149(55.8%) followed by in 30-60 minutes 44(16. 5%). It indicates a maximum number of an accident occurred in a near trauma center. This is in contrast with a study conducted in Haryana were 24% reached within half an hour and 57% achieved in the next one hour[12].

This study shows that according to a type of motorized two-wheelers vehicles were highest in number 174 (65.2%) followed by vehicles of four-wheelers 69(25.8%) & heavy vehicles 24(9%).A retrospective study conducted in Bhopal Madhya Pradesh was found that two-wheeler occupants 929(73%) followed by an occupant of four-wheelers 137(11%) and heavy vehicles 76(6%)[2]. A hospital-based cross-sectional study

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conducted in
Tirupati hospital ,India, (54.3%) were using motorcycle[13].

This study found that factors leading to road traffic accidents amongst the driver factor include over-speed ranks first followed by drinking and driving and no use of safety measures. Pedestrian factors include not obeying the traffic rules and other reasons are the use of mobile phone during road crossing and not crossing the road from a zebra crossing.

The limitation of this study was that it was only confined to road traffic accident patients visiting trauma centers, so it might not predict road traffic accidents from different health services settings.

CONCLUSIONS

This study concludes that the majority of the road traffic accident were of productive age group (52.4% were of age group, 31-45 years), out of which males were higher in number 192(71.9%). Most common time for the accidents to occur was at day time from 8 AM to 4 PM 152 Similarly, the riding habits like drink and drive, over speed, not obeying the traffic rules and regulations and environmental factors like slippery road, slim avenue and muddy road were found to be the foremost reasons for road traffic accidents. According to above findings coordination between public and private sectors will help to minimize the road traffic accident.

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