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Pattern and Cause of Road Traffic Accidents in Morang District

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ABSTRACT

Background: Road traffic accidents is growing continuously as a global burden and would be a leading cause of death in developing countries. The global burden of road traffic accidents continues to grow and promises to overtake tropical diseases as leading causes of death in the developing world. This study aimed to study the pattern and causes of road traffic accidents in Morang district.

Methods: Record based descriptive cross-sectional study was used by reviewing all registered RTA cases of the District Traffic Police Office, Morang during fiscal year 2074/75 (Shrawan 2074 to Ashad 2075). 501 road traffic accident cases were found in the record and used for the study. The data was analysed using SPSS v 16 and presented in normal frequency tables and crosstables.

Results: Out of 501 accidents 32.2% occurred Friday and Saturday. In the evening time, most of the accidents occurred. In highways, 53.5% of accident cases occurred. 82% of the accidents occurred in blacktop road. Two-wheelers are mostly involved in accident cases (77%). Negligence (55.7%) and over-speed (36.5%) were the major reasons for accidents. In 33% of cases, accidents occurred involving pedestrians and cyclists. 80% of the drivers are below 40 years; similarly 80% of the victims are also below 40 years. Among victims who died 84.1% were male and among injured 73.3% were males.

Conclusions: Weekends, evening, highways and two wheelers are more accident prone time, place and vehicles respectively. Overspeed and negligence of driver tends to major cause of accidents and majority of victims are the young bike riders and pedestrians.

Keywords: Burden; causes; road traffic accidents; pattern

INTRODUCTION

The global burden of road traffic injuries continues to grow and promises to overtake tropical diseases as a leading cause of death in the developing world.[1] Road traffic crashes, killing 1.2 million people worldwide per annum becoming matter of great concern globally. Globally, road traffic accident (RTA) is 8th leading cause of death and is projected to rise to the top five by 2030.[2] Over 90% of the world's fatalities on the roads occur in low-income and middle-income countries like Nepal, which have only 48% of the world's vehicles.

Nepal is a low income country in developmental transit with improving road networks but that is not in keeping with population increase from 23.2 million in 2001 to 26.6 million in 2011[3], but number of vehicle rise of 218% in this period. This study carried out to know pattern and causes of RTAs so that policy and programs for RTA prevention can be carried out.

METHODS

A record based descriptive cross sectional study was carried out by reviewing registered RTA cases of District traffic police office, Morang. All complete case report of registered RTA cases of the fiscal year 2074/75 was taken for the study purpose. Data was collected by receiving written consent from district traffic police office Morang and data was collected by trained enumerators having public health background. There were total 501 registered RTA cases, recorded in semi-structured checklist prepared based on available information and objectives of the study. Ethical approval was taken from NHRC before starting study. Data was analysed by using SPSS v 16 and presented in suitable diagrams and frequency distribution tables. Principal Investigator had regularly monitored and supervised data enumerators

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during the period of data collection.

RESULTS

Accidents have occurred more from 4 PM to 8 PM but there are less number of accidents seen in morning time (Figure 1).

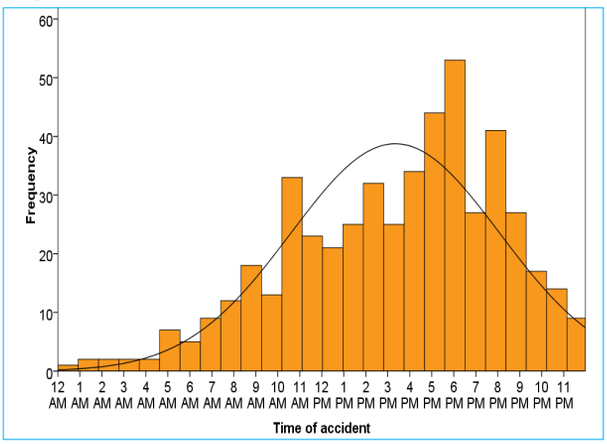

Figure 1. Distribution of accidents by time (N= 498).

In weekend i.e. Friday (17%) and Saturday (15.2%) there is high number of accidents. On other days there is less accidents as compare to weekend (Figure 2).

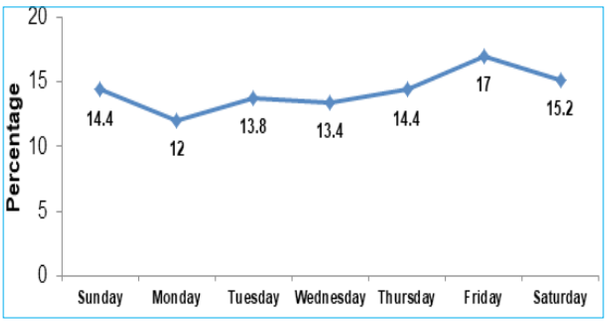

Figure 2. Distribution of accidents by day of week (N=501).

Around 1/4th of the accidents occurred in Sundarharaichha Municipality (23.8%) followed by Belbari municipality (13.8%), Urlabari Municipality (12.6%). In these Municipalities there is Nepal's longest and busy highway East west highway. Similarly 11% of the accidents occurred in Biratnagar Metropolitian city followed by 8.0% at Budhiganga RM in which Koshi Highway exists. Majority of the victims were in Sunderharaichha Municipality (21.5%) followed by Belbari (14%). Among deaths maximum percentage is seen in Belbari Municipality (16.8%) followed by Sundarharaichha Municipality (15%). In Letang Municipality there was no deaths observed. Other municipalities where deaths were high are Urlabari, Biratnagar and Pathari Sanischare Municipality. Among injured population Maximum was seen in Sunderharaichha Municipality (22.4%) followed by 14% in Belbari municipality and 13.5% in Biratnagar Metropolitian city (Table 1).

Table 1. Distribution of number and effects of accidents by local level

Name of local level	No of accidents	Effect of Accidents	
		Death	Injury
Biratnagar Metropolitian City	55 (11.0%)	14 (12.4%)	112 (13.5%)
Belbari Municipality	69 (13.8%)	19 (16.8%)	116 (14.0%)
Sundarharaicha Municipality	119 (23.8%)	17 (15.0%)	186 (22.4%)
Pathari Sanischare Municipality	25 (5.0%)	8 (7.1%)	49 (5.9%)
Rangeli Municipality	15 (3.0%)	7 (6.2%)	24 (2.9%)
Urlabari Municipality	63 (12.6%)	14 (12.4%)	98 (11.8%)
Sunbarsi Municipality	6 (1.2%)	4 (3.5%)	9 (1.1%)
Ratuamai Municipality	12 (2.4%)	4 (3.5%)	20 (2.4%)
Letang Municipality	9 (1.8%)	0 (0.0%)	14 (1.7%)
Budhiganga RM	40 (8.0%)	6 (5.3%)	55 (6.6%)
Dhanpalthan RM	31 (6.2%)	5 (4.4%)	42 (5.1%)
Gramthan RM	26 (5.2%)	5 (4.4%)	38 (4.6%)
Jadaha RM	3 (0.6%)	1 (0.9%)	27 (3.3%)
Kanepokheri RM	8(1.6%)	3 (2.7%)	11 (1.3%)
Katahari RM	9 (1.8%)	2 (1.8%)	13 (1.6%)
Kerabari RM	4(0.8%)	2 (1.8%)	4 (0.5%)
Miklajung RM	7 (1.4%)	2 (1.8%)	12 (1.4%)
Total	501 (100%)	113 (11.98%)	830 (88.02%)

In more than 3/4th of the accidents cases, two-wheelers like motorcycles and scooters (77.74%) were involved. After that light vehicles like van jeep pick up were involved (12.37%) followed by bus (11.57%). Tractors also involved in 10.18% of the accidents cases. (Table 2)

Table 2. Distribution of type of vehicles involved in accidents [Includes multiple vehicles] (N=501)

Type of vehicles	Frequency	Percent
Bus	58	11.57
Two-wheelers (Motorcycles, scooters)	390	77.84
Truck	40	7.98
Car	28	5.59

Three Wheelers (E-rickshaw, tempo)	38	7.58
Van/jeep/pickup	62	12.37
Tripper	11	2.19
Tractor	51	10.18
Others	13	2.59
Total	691	137.89

Looking after the reasons of the accidents mentioned in the police record in more than half of the accidents cases it was mentioned that negligence (55.7%) as a reason for accidents followed by over speed (36.5%). Other reasons mentioned are overtaking and alcohol consumption 2% each (Table 3).

Table 3. Distribution of reasons of the accidents (N=501)

Reasons for accidents	Frequency	Percent
Negligence	279	55.7
Over speed	183	36.5
Overtaking	10	2.0
Alcohol consumption	10	2.0
Others (Overload, mechanical problems, cattles)	19	3.8

Majority of the accidents included collision involving pedestrian i.e. 21.4%, followed by vehicle roll over (19.2%) and head on collision 18.8%. Similarly minimum accidents involved multiple vehicle collision i.e. 1.8% and hit and run 3.4% (Table 4).

Table 4. Distribution of accidents by its types (N=501)

Type of Accidents	Frequency	Percent
Vehicle roll over	96	19.2
Head on collusion	94	18.8
Rear end collusion	34	6.8
Multiple vehicle collusion	9	1.8
Side impact collusion	22	4.4
Collision involving paedestrian	107	21.4
Collision involving cyclist	65	13.0
Hit and run	17	3.4
Collusion involving fixed object and parked vehicles	28	5.6
Others	29	5.8

Maximum percentage of the victims are Bike rider (29.2%) followed by pillion rider (18.3%). After that pedestrians are 14% followed by bus passenger (12.5%). According to victims road user status by sex almost all (96.4%) are bike riders which is similar to tractor drivers and persons travelling in tractors (92.0%) are males. Females are comparatively more as bus passenger (55.9%) followed by drivers and passengers of light vehicles (43%) and Pillion riders (36%) as compared other types (Table 5).

Table 5. Distribution of victims road user status by sex (N=941)

Victims road user status	Sex of victim		Total
	Male	Female	
Bike rider (Person in front)	265 (96.4%)	10 (3.6%)	275 (29.2%)
Bike rider (Person in back)	110 (64.0%)	62 (36.0%)	172 (18.3%)
Bus passenger	52 (44.1%)	66 (55.9%)	118 (12.5%)
Driver and passenger of light vehicles and cars	32 (56.1%)	25 (43.9%)	57 (6.1%)
Driver and passenger of 3 wheeler vehicles	31 (72.1%)	12 (27.9%)	43 (4.6%)
Pedestrians	92 (69.7%)	40 (30.3%)	132 (14.0%)
Cyclist	58 (78.4%)	16 (21.6%)	74 (7.9%)
Tractor drivers and person travelling in tractor	46 (92.0%)	4 (8.0%)	50 (5.3%)
Others	16 (80.0%)	4 (20.0%)	20 (2.1%)
Total	702 (74.6%)	239 (25.4%)	941 (100%)

DISCUSSION

This record based cross-sectional study carried out to explore burden, pattern and causes of accidents of Morang district has reviewed 501 cases RTAs from district traffic police office, Morang. In Morang district, one-fourth of the accidents occurred in Sundarharaichha Municipality followed by Belari, Urlabari municipality. In these all three municipalities, National highway of Nepal, East-west highway passes through. This study also found that more than half (53.5%) of the accidents cases occurred in highway only and majority of accidents occurred in the blacktop (82%).

In this study, 17 % of the accidents occurred on Friday followed by 15.2% on Saturday. This also resembles with the study conducted in the eastern region of Nepal. In that study, 17.2% of the accidents occurred in Friday[4] another study conducted in Maharastra India shows that 41.6% of the accidents occur in weekend (Saturday and Sunday)[5] From the above information it can be said that in the weekend chance of accident increases as compare to other days.

This study found that 64.7% of the accidents occurred involving single vehicles. On which major vehicle dominated in occurring accidents are 2 wheelers or motorcycles and scooter. (77.84%) followed by light vehicles. The study findings are similar to study conducted in the eastern region of Nepal which revealed that 80% of the vehicles involved in accidents are 2 wheeler vehicles.[6] In this study major cause for the accidents are found to be negligence (55.7%) followed by over-speed (36.5%) but another study carried out in eastern Nepal shows that alcohol consumption is the major cause for accidents.

In the type of accidents, around one-fourth of accidents have occurred involving pedestrian (21.4%) followed by head-on collusion (18.8%) and vehicle rollover (19.2%). These findings is not similar to the study carried out in Bhutan. That study showed that 41% of the accidents occurred involving two vehicle collision followed by 30% hit on a stationary object. In that study, only 8% of accidents have occurred hitting paedestrian.[7]

In this study, among victims who were killed or injured the age distribution shows that 71% of the people were below 40 years. This is also similar or more than various other studies. A prospective study conducted in Maharastra, India shows that 64.66% of the people affected by the accidents are below 40 years[8] Similarly, another study carried out in Amritsar India shows similar findings (63.5%)[9] and a study conducted in Bhutan shows similar results. From this, it can be observed those younger age groups are more suffered from RTA.

This study is a secondary data-based study. The number of injuries and deaths mentioned here are based on the initial police record. So the overall outcome and burden of RTA in terms of disability and mortality could not assess. This study also could not find what type of injuries does it cause.

CONCLUSIONS

This study conducted to explore burden, pattern and cause of accidents in Morang district using RTA data of fiscal year 2074/75 showed that Sundarharaicha municipality was the high-risk area for RTA, most of the accidents occurred in weekend and most of the accidents involved two-wheelers. Over speed and driver negligence tends to the major cause of accidents and the majority of victims are the young bike rider.

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