



## ENVIRONMENTAL RELATED FACTORS CAUSING ROAD TRAFFIC ACCIDENTS

## General Surgery

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## ABSTRACT

**Background:** We identified environmental factors causing road traffic accidents.

**Method:** Detailed history of around 1100 patients of road traffic accident was taken to find out the cause of accident. Situation when the condition of the victim does not warrant the interview, like in case of severe injury, under the influence of alcohol, death etc., the relatives or the attendants were interviewed.

**Result:** Most people were of rural background. Majority of the patients (70.45%) were victims of collision with two wheelers. 2-wheeler accidents were mostly (around 16.36%) due to animal collision. 37.27% patients were exposed to RTA because of not following traffic rules properly. Time of accident is also one of the environmental factors and we found that most accidents happened between 6 p m to 12:00 mid night and on Saturday

**Conclusion:** Significant relationship found with various environmental factors like location of accident, type of vehicle, surrounding environment of vehicle, cause of accident, visibility, time and day. By reducing these factors influence, we can decrease the frequency of RTA.

## KEYWORDS

Environmental factors, Type of vehicle, Road traffic accident.

## INTRODUCTION

Road traffic accidents (RTA) have become a major public health issue of the world, particularly in the developing nations. Various environmental factors like location of accident (rural/urban), type of vehicle, surrounding of accident, visibility, time of accident and day of accident are reason behind any RTA.

Significant growth in RTA needs concern to prevent RTA by decreasing responsible factors like better roads, roadside illumination, strict traffic rule, etc.

## METHOD:

The sample size for this study is approximately taken to be 1100 to avoid loss of numbers due to non-availability and refusals. All patient enrolled for road traffic accident having polytrauma at trauma centre.

**Study Area-**Trauma centre MDM Hospital Jodhpur

**Study Design-** Observational hospital-based study

## Inclusion Criteria

All patient of road traffic accident attending trauma center located at MDM Hospital affiliated to Dr. S. N. Medical College, Jodhpur

## Exclusion Criteria:

1. Patients register at M.D.M. Trauma Centre other than Road traffic accident like assault, accidental fall.
2. Not given consent for the study.
3. Brought dead.

## RESULT:

**Table 1: Location Wise Distribution Of RTA Patients**

Area	No. of patients	Percentage
Rural	835	75.91
Urban	265	24.09

Most people were of rural background.

**Table 2: Distribution Of Patients According To Type Of Vehicle**

Type of vehicle	No. of patients	Percentage
2-wheeler	775	70.45
4-wheeler (LMV)	195	17.72
Pedestrian	85	7.73
Commercial motor vehicle	45	4.09
Total	1100	100.00

Most of the patients (70.45%) were victims because of two wheelers.

**Table 3: Distribution Of Patients According To Environment Related To RTA**

Two-wheeler of RTA	No. Of RTA patients	%
2wheeler collision with animal	160	16.36

2wheeler collision with 4wheeler	160	14.54
2wheeler collision with 2wheeler	150	13.63
Fall from 2wheeler on uneven road	135	12.27
High speed 2wheeler	90	8.18
2wheeler slip at curved road	85	7.72
2wheeler collision with HMV	30	2.72
2wheeler hit & run	30	2.72
2wheeler collision with divider	25	2.27
2wheeler slipped at speed breaker	5	0.45
2wheeler slipped at water filled pit	5	0.45
2wheeler training	5	0.45

Most of 2-wheeler accidents were due to animal collision - approx. 16.36%.

**Table (b)**

Four-Wheeler of RTA	No. Of RTA patients	%
4wheeler hit & run	60	5.45
4wheeler collision with 4wheeler	45	4.09
4wheeler collision with animal	35	3.18
4wheeler collision with HMV	35	3.18
Burst of tyre 4wheeler	20	1.81

**Table (c)**

Miscellaneous	No. Of RTA patients	%
Fall from tractor	10	0.9
Heavy motor vehicle collision with animal	10	0.9

**Table No 4: Distribution Of Patients As Per Causes Of Road Traffic Accidents**

Mode of Injury	Number	%
Insufficient execution of Traffic Rules	410	37.27
Poor Road quality	340	30.90
Animal Collision	225	20.45
High speed	105	9.54
Burst of Tyre	20	1.81
Total	1100	100

Out of 1100 patients, 410 (37.27%) were exposed to RTA because of inappropriately following of traffic rules, followed by 340(30.90%) because of poor road quality.

**Table No: 5 Distribution Of RTA Cases As Per Time Of Occurrence**

Time of occurrence	NO.	%
Morning (6.01 am-12.00 noon)	190	17.27
Afternoon (12.01 pm -6.00 pm)	235	21.36
Evening (6.01 pm-12.00 mid night)	415	37.73
Night (12.01 am-6.00am)	260	23.64

Most patients got accident between 6 p m to 12:00 mid night

**Table No 6: Distribution Of RTA On Basis Of Day**

Day	No. of cases	%
Monday	165	15
Tuesday	105	9.54
Wednesday	115	10.45
Thursday	145	13.18
Friday	175	15.90
Saturday	205	18.63
Sunday	190	17.27

Mostly RTA occurs on Saturday.

### DISCUSSION:

In our study, more than 75.91% patients are from rural area. Even for whole of India (2011), it was noted that trauma in the rural region is accounting to 53.5%. Agarwal,<sup>1</sup> had also shown that fifty four percent of RTA victims belonged to rural habitants.

The reason for a greater number of RTA cases in rural areas may be a

1. The bad condition of the roads in rural area,
2. The inadequate knowledge about road safety among rural people,
3. No proper traffic rules implementation in rural areas.
4. Proximity to national / state highway.

In present study, most of the patients (70.45%) were victims of collision with two wheelers followed by 39(17.71%) with four wheelers. 17(7.73%) were pedestrians & 9(4.09%) were exposed to trauma with heavy motor vehicle. Similar type of results found in other study<sup>2</sup> where maximum number of vehicles were 2-wheeler accounting to 40% whereas least number of vehicles were using bullock cart. Study conducted at Puducherry where a total of 685 different types of vehicles were involved; found that out of total 19.4% were bicycles, 16.8% were trucks, 14.9% were buses and 22.8% were 2-wheelers, respectively Bharadwaj<sup>3</sup> had also observed that, most of the victims 41.5% were 2-wheeler occupants.

In our study, most of the 2-wheeler accidents were due to animal collision (16.36%) and high speed which contributes to about 8.18% RTAs. Whereas Clark<sup>4</sup>, in a study had found that high speed is a predisposing factor in 64% of the accidents.

In our study, maximum RTA occurred in the evening, 6pm – 12 midnight(37.73%)

A study by Ganveer<sup>5</sup> observed that about 53.19% of the accidents took place in the daytime.

Bharadwaj<sup>3</sup> had also shown that most (40.1%) of the Road traffic accidents occurred in the evening hours from 6pm to 12 midnight.

A study conducted by Ranganathan<sup>6</sup> had shown that greater than 60.2% of vehicular accidents took place in the daytime (6AM - 6PM).

In present study more than 18% of cases were admitted on Saturday than on any other day and more than one third of cases were admitted on the weekends. Inline observations were made in studies conducted by Jha<sup>7</sup>, Mehtha<sup>8</sup> Stallones<sup>9</sup>, Ghimire<sup>10</sup> and Jirojwong<sup>11</sup>.

In contrast to our study, the study conducted by Ghosh<sup>12</sup>, Bharadwaj<sup>3</sup> and Jolly<sup>13</sup> observed highest number of Road traffic accidents on Wednesdays.

### CONCLUSION

Two-wheeler riders are more commonly affected than 4-wheeler riders.

Collision with stray animals and other vehicles is common cause of RTA, poor road condition like path holes, poor illumination and not following traffic rules, high speed are the common causes of accidents. 6 p.m. to 12 mid night and weekend is the common time of accidents due to various social reasons.

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