

# Pattern and Distribution of Scalp Injuries in Fatal Road Traffic Accidents in Rohtak Region of Haryana - An Autopsy based Study

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## Abstract

Head injuries are one of the leading cause of death worldwide as head being the most vulnerable part of the body. The present study was performed on 100 cases of road traffic accidents in which head injuries were present. In this study, males clearly outnumbered females. The highest incidents were seen in the age group 21 - 30 years (26%), followed by the age group 11 - 20 years (20%). In this study, special attention was given to the pattern and distribution of scalp injuries. Commonest scalp injury noticed in the present study was contusion, seen in 33% of cases, followed by lacerated wounds in 30% cases.

**Key Words:** Road traffic accidents, Scalp injury, Abrasion, Contusion, Laceration.

## Introduction

An accident has been defined as “an unexpected unplanned occurrence which may involve injury”. In 1956, a WHO advisory group defined accidents as “an unpremeditated event resulting in recognizable damage.”<sup>1</sup> India accounts for about 10 % of road accident fatalities worldwide.<sup>2</sup> In age group of 5 to 44 years, mortality is as high as 10 percent.<sup>3</sup> Among the various fatal injuries in road accident, head injury is the principal killer. Head injury usually refers to traumatic brain injury but is a broader category because it can involve damage to structures other than the brain, such as the scalp and skull.<sup>4</sup> Scalp contusions are difficult to see with naked eyes but better felt. If, scalp laceration continue bleeding, it may lead to death.<sup>5</sup> In this study, patterns of scalp injuries in road traffic accidents with regards to age, sex, season, type of injuries over the scalp were analysed and discussed.

## Material and Method

The present study was carried out in the Department of Forensic Medicine, Pt. B. D. Sharma PGIMS, Rohtak on 100 cases of death due to road side accidents, brought to the department for post-mortem examination, wherein, head injury was present. Cases of road side

accidents in which there was some suspicion about road side accidents were not included in the study. The details of the all 100 cases namely; age, sex, season, type of injured and scalp injuries were recorded at the time of post-mortem examination.

## Observations & results:

1. As per the **Table no. 1**, males accounted for 81 % victims females were involved in 11 % cases only.

**Table: 1. Sex wise distribution of cases.**

Serial Number	Sex	Number of cases	Percentage
1.	Male	89	89
2.	Female	11	11
	Total	100	100

2. Age-wise, maximum cases of road side accidents were seen in the 21- 30 years age group (26 %), followed by 11- 20 years age group (16%). (**Table 2**)

**Table: 2. Age wise distribution of cases.**

Serial Number	Age group (In years)	Number of cases	Percentage
1.	01-10	03	03
2.	11-20	20	20
3.	21-30	26	26
4.	31-40	16	16
5.	41-50	14	14
6.	51-60	10	10
7.	61-70	09	09
8.	71-80	01	01
9.	81-90	01	01
10.	91-100	00	00
	Total	100	100

3. Road traffic accidents were more common in Monsoon season (35%) and least in post monsoon season (19%). **(Table 3)**

**Table: 3. Distribution of cases according to seasonal variation of accidents.**

Serial Number	Season	Number of cases	Percentage
1.	Monsoon (June, July, Aug, Sept)	35	35
2.	Summer (March, Apr, May)	24	24
3.	Winter (Dec, Jan, Feb)	22	22
4.	Post monsoon (Oct, Nov.)	19	19
	Total	100	100

4. Most common vehicle used was two wheeler (54%) and least common was 9 tire truck (1.23%) **(Table 4)**

**Table: 4 Distribution of cases according to type of vehicle used by victim.**

Serial Number	Type of vehicle			Number of cases		Percentage
1. a. b. c.	Two wheelers	Motorcycle	Rider	41	54	74.09
			Pillion rider	13		
		Scooty	Rider	05	06	
			Pillion rider	01		
2.	Three wheelers		12			14.81
3. a. b. c. d. e. f.	Four wheelers	Car	Driver	01	03	09.87
			Front seat occupant	02		
			Back seat occupant	00		
		Tractor	Driver	00	02	
			Co passenger	02		
		Tata truck (Four wheeler)	Driver	01	03	
			Co passenger	02		
		4.	More than four wheelers	Truck (9 Tires )	Driver 01	
	Total		81			100

5. Among two wheelers, most of the victims were not wearing the helmet (65%) and 33.33 % died despite of using the helmet. (Table 5)

**Table: 5. Distribution of cases according to percentage of helmet used or not used by accident victims of two wheelers.**

Serial Number	Use of helmet	Number of victims	Percentage
1.	Not wearing helmet	39	65.00
2.	Wearing helmet	20	33.33
3.	Not known	01	01.67
	Total	60	100

6. Among scalp injuries contusions were most common (33%) and combination of abrasion and laceration was least common (1%). (Table 6)

**Table: 6. Distribution of cases according to type of injuries of scalp.**

Serial Number	Type of injury	Number of cases	Percentage
1.	Abrasion	09	09
2.	Contusion	33	33
3.	Laceration	30	30
4.	Abrasion and contusion	09	09
5.	Abrasion and laceration	01	01
6.	Contusion and laceration	02	02
7.	No Scalp injury	16	16
	Total	100	100

### Discussion

In this study, males outnumbered the females. Similar results were observed by Arora sandhya et al<sup>6</sup>, Soni et al<sup>7</sup> and Giri S et al<sup>4</sup>.

In the age group analysis of the victims, maximum incidence was observed in age group of 21-30 years which was also noticed by the other authors in their studies like Arora sandhya et al<sup>6</sup>, Soni et al<sup>7</sup> and Giri S et al<sup>4</sup>.

It is observed in this study that the road accident victims largely constitute young people in the productive age groups its major implication on economic cost of road accidents, apart from their emotional and psychological impact.

On seasonal analysis, maximum numbers of accidents occurred in monsoon season which was also observed in the studies conducted by Honnunar SR et al<sup>8</sup>, Banzal RK et al<sup>9</sup> and Shiva Kumar BC et al<sup>10</sup>.

In India, there is a big problem of destruction of roads during monsoon season due to heavy raining. The road pavement deteriorates due to various factors like poor drainage, low quality of pavement materials let the rain water to penetrate through the pavement due to which severe failure like cracks, potholes, depressions, rutting, ravelling etc. take place. The impacts of these failures also occurred on road transport system, accident

is the major problem due to wet surface and widening of potholes.

Two wheeler occupants were most commonly involved victims which is similar to the findings of the studies conducted by the Kumar N et al<sup>11</sup>. Two-wheeler accounted for the highest vehicle category-wise share in road accidents, because this is the category of vehicle preferably used by youngsters and this is the category which is also dominates the composition of registered vehicles in the country.

Among two wheelers, most of them were not using the helmet. Similar findings were observed in the studies conducted by Thumbe HR et al<sup>12</sup>, Gupta V<sup>13</sup> et al and Kumar P R<sup>14</sup>.

Among scalp injuries, when taken in isolation, contusions were most common. Similar findings were observed in the studies conducted by Chakraborty Pradipta Narayan<sup>15</sup>, Soni SK et al<sup>7</sup> and Giri S et al<sup>4</sup>.

### Conclusion

The substantial increase in the use of two wheelers, particularly in developing countries like India, is being accompanied by an increase in the number of head and traumatic brain injuries. Head is the most vulnerable part of the body as shown in the various studies so raising awareness about traffic rules especially in two wheelers can decrease the morbidity and mortality in road side

accidents.

**Conflict of Interest:** None

**Financial Assistance:** None

**Ethical clearance was taken from ethical committee of PGIMS Rohtak during the submission of plan.**

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