



Original Research Article

## An Epidemiological Study of Road Traffic Accident Cases in Tertiary Care Hospital of Central Uttar Pradesh

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### ABSTRACT

**Research Question:** What are the various epidemiological factors related to road traffic accident cases?

**Introduction:** Accident is a multifactorial event and can be studied in terms of agent, host and environment. WHO has defined road traffic accident as when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction.

**Objective:** To study demographic profile and circumstances of accidents among victims of road traffic accidents.

**Methodology:** This cross sectional study was conducted at UP Rural Institute of Medical Sciences & research (UPRIMS & R) hospital, Saifai, Etawah (Uttar Pradesh) from 1<sup>st</sup> January 2014 to 30<sup>th</sup> June 2014. The study group consisted of all the Road Traffic Accident (RTA) victims reporting to Emergency Department of UPRIMS & R Hospital in the study period. The data were summarized using percentages. The chi-square test was applied to see if there was any association between the different variables associated with the accidents.

**Results:** There is a high percentage of road traffic accident among males of younger age group in the socioeconomic class 3 & 4, those were using motorized two wheelers.

**Key Words:** Road traffic accident, Injury pattern, Road traffic accident cases, RTA.

### INTRODUCTION

Accidents are not often due to ignorance, but are due to over confidence, thoughtlessness and carelessness. Accident is a multifactorial event and can be studied in terms of agent, host and environment. Human, environment and vehicle factors plays important role before, during and after an accident. A road traffic accident can be defined as “an event that occurs on a way or street open to public traffic; resulting in one

or more persons being injured or killed where at least on moving vehicle is involved”.<sup>[1,2]</sup> In other words WHO has defined road traffic accident as when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction, such as a tree or utility pole. Any injury occurring as a result of road traffic accident referred to be as road traffic injury.<sup>[3]</sup> Road traffic accident is one of the leading causes of deaths worldwide

and majority of deaths occurs in the developing countries. It is estimated that deaths resulting from road traffic accidents are almost 1.2 million worldwide while injuries from such accidents are estimated at 50 million. [4] It has been estimated, unless immediate action is taken, road deaths will be the fifth cause death by 2030, resulting in an estimated 2.4 million fatalities per year. [5,6] Road traffic injuries are the second leading cause of mortality in the 15-29 year age group. [3] India already accounts for about 9.5% of the total 1.2 million fatal accidents in the world. [7]

In India, during the year 2011, there were around 4.98 lakh road traffic accidents killed 1.42 lakh people and injured more than 5 lakh persons, many of whom are disabled for rest of their lives. [8,9] India with a population of 1.2 billion is witnessing a major shift in its health problems due to epidemiologic and socio-demographic transition. With marginal decline in communicable and infectious diseases, Non-Communicable Diseases and injuries have become the leading causes of deaths, disabilities and hospitalization in the country. While vaccine preventable diseases are major problems in the children, Non-Communicable disease are a problem of middle aged and elderly. In the young population of 15-44 years, injuries have becoming leading killer diseases. [10]

Since there are very less studies on road traffic injuries, so the present study was conducted to find out demographic profile of road traffic accident victims and epidemiological factors of road traffic accidents.

#### ***Aim and Objectives:***

To study demographic profile and circumstances of accidents among victims of road traffic accidents.

## **MATERIALS AND METHODS**

This cross sectional study was conducted at UP Rural Institute of Medical Sciences & research (UPRIMS & R) hospital, Saifai, Etawah (Uttar Pradesh) from 1<sup>st</sup> January 2014 to 30<sup>th</sup> June 2014. The study group consisted of all the Road Traffic Accident (RTA) victims reporting to Emergency Department of UPRIMS & R Hospital in the study period.

For the purpose of the study RTA 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. Following accidents victims were excluded from the study-

1. Injury involving a stationary vehicle (e.g. persons getting injured while loading or washing a vehicle).
2. Road injuries in which there was no involvement of vehicle such as a person falling and slipping on the road and sustaining injury.
3. Deaths due to RTA.

The victims of the accidents were interviewed to obtain the information about the circumstances leading to accident. A pre-tested proforma specially designed for this purpose was used for interviewing the accident victims in the emergency department of UPRIMS & R Hospital, Saifai, Etawah. The relatives or attendants were interviewed, where the condition of the victims did not warrant the interview. Besides, informed consent was taken from each participants and confidentiality of the information collected was ensured. The information collected consisted of personal identification data, time, date, day and type of vehicles involved in RTA, protective gear worn and category of road users. The medico-legal records and case sheets were referred for collecting additional information and where necessary for cross-checking. The data were summarized using percentages. The chi-square test was applied to see if there was any association between the

different variables associated with the accidents.

## RESULTS

In the present study a total of 477 cases were included who admitted in the emergency department of UPRIMS & R Hospital, Saifai, Etawah during study period.

**Table 1: Age and Sex distribution of Road Traffic Accident cases**

Age Group (Years)	Male No.(%)	Female No.(%)	Total No.(%)
≤ 15	30(8.04)	2(1.92)	32(6.70)
16 - 30	167(44.77)	44(42.31)	211(44.23)
31 - 45	119(31.90)	33(31.73)	152(31.86)
46 - 60	40(10.72)	16(15.38)	56(11.74)
≥ 60	17(4.57)	9(8.66)	26(5.47)
Total	373(100)	104(100)	477(100)

Table 1 shows that there were 373(78.20%) male and 104(21.80%) female RTA victims. The highest numbers of victims were in the age group of 16 – 30 years i.e.44.23% followed by 31 – 45 years (31.86%). There were 32 victims below or equal to the age of 15 years.

**Table 2: Educational status of Road Traffic Accident cases**

Educational Status	No.	Percentage
Illiterate	92	19.29
Up to Primary School	104	21.80
Up to High School	127	26.62
Intermediate	97	20.33
Graduate & Post Graduate	47	9.85
Professional	3	0.64
Not applicable	7	1.47
Total	477	100.0

Among 477 RTA victims 19.29% were illiterate. Very few victims were having professional and higher qualifications.

**Table 3: Socio-economic status of Road Traffic Accident cases**

Socio-economic class*	No.	Percentage
Class 1	9	1.89
Class 2	76	15.93
Class 3	197	41.30
Class 4	188	39.41
Class 5	7	1.47
Total	477	100.0

\*Modified Kuppuswamy scale for urban areas and Udai Pareek for rural areas

Victims belonging to the socio-economic class 3 were 41.30% and only 1.89% and 1.27% belonged to socio-economic class 1 and class 5 respectively

**Table 4: Road user category of Road Traffic Accident cases**

Road User Category	No.	Percentage
Pedestrian	53	11.11
Pedal Cyclist	19	3.98
Motorized two wheeler Driver	212	44.44
Motorized two wheeler Pillion	76	15.93
Light motor vehicle occupant	24	5.04
Heavy motor vehicle occupant	13	2.73
Three wheelers occupants	47	9.85
Tractor	33	6.92
Total	477	100

A high proportion of the patients of Road Traffic Injuries were either motorized two wheeler driver (44.44%) or motorized two wheeler pillion (15.93%). Pedestrians were 11.11 percent and pedal cyclist was 3.98 percent.

**Table 5: Distribution of Day of accident of Road Traffic Accident cases**

Day of Accident	No.	Percent	P value
Monday	60	12.58	0.003
Tuesday	96	20.13	
Wednesday	95	19.92	
Thursday	64	13.42	
Friday	72	15.09	
Saturday	43	9.01	
Sunday	47	9.85	
Total	477	100	

Most of the accidents occurred on Tuesdays (20.13%) and Wednesdays (19.92%) while less numbers of accidents were reported on Saturdays (9.01%) and Sundays (9.85%). The difference in the number of accidents on different days of the week was significant.

## DISCUSSION

In the present study, the highest number of road traffic accident cases was found between the age group of 16-30 years (44.23%). The similar findings were also reported from Delhi, Lucknow and Pudducherry. [11,9,2,12] This shows that the people of the most active and productive age group are involved in road traffic accidents which add a serious economic loss to the

community. The present study also showed that there are less accidents in the in the age group of 15 years and less and 60 years and above. The reason may be that children are taken care of by elders and less use of vehicles in the adolescent group. Lower cases of road traffic accidents in those aged 60 years and above could be due to the generally less mobility of the people.

Males (78.20%) outnumbered females (21.80%) giving a male:female ratio 3.59:1. However in other studies male and female ratio was high. [2,9] The high preponderance of males can be attributed to high mobility of males and their high exposure to traffic. However the difference in proportion of males and females was not much in developed countries.

It was observed that more people with lower level of education were involved in road traffic accidents. Similar results were also observed by other researchers. [2,11,13] However this relationship between education and road traffic accidents may not be causal.

More than 80% of the patients were from the socioeconomic class 3 and 4 and this was similar to other studies. [9,14] This could be due to higher proportion of the middle class relying on Motorized Two wheelers which are more vulnerable to accidents.

In the present study, motorized two wheeler driver constituted 44.44% of the road traffic accidents cases followed by motorized two wheeler pillion (15.93%), pedestrian (11.11%). Similar observations were reported in other studies. [9,15,16]

Majority of the accidents occurred on Tuesdays (20.13%) and Wednesdays (19.92%) while less numbers of accidents were reported on Saturdays (9.01%) and Sundays (9.85%). These finding were similar to study conducted by Chauhan A et al [9] but different from other studies. [2,15]

## CONCLUSION

In the present study, there is a high percentage of road traffic accident among males of younger age group in the socioeconomic class 3 & 4, those were using Motorized two wheelers.

### **Recommendations:**

There is a need for road safety education. Measures should be taken to minimize the road traffic accidents. This requires intensive IEC and BCC. Road safety education should be incorporated in curriculum of primary, middle and higher level of school students.

## REFERENCES

1. Manisha Ruikar. National statistics of road traffic accidents in India. Journal of Orthopaedics, Traumatology and Rehabilitation; Vol-6:1 Jan-Apr 2013.
2. Jha N, Srinivasa DK, Roy G, Jagdish S, Minocha RK. Epidemiological study of road traffic accident cases: A study from south India. Indian J Community Med.2004;29(1):20-24.
3. Peden MM, World Health Organization, World Bank. World report on road traffic injury prevention, Geneva: World Health Organization; 2004.
4. R.Manigandan, R. Arunmozhi. Road Traffic Accidents in Tamilnadu: A Historical Study. Indian Streams Research Journal. 2013;3(7).
5. The global burden of disease, 2004 update. Geneva: World Health Organization; 2008.
6. World health statistics. Geneva: World Health Organization; 2010.
7. Mondal P, Sharma N, Kumar A, Bhangale UD, Tyagi D, Singh R. Effect of rainfall and wet road condition on road crashes: A critical Analysis.SAE 2011-26-0104.
8. Government of India, Ministry of Road Transport and Highways: Annual Report 2010-11.
9. Chauhan A, Ahmed N, Singh JV, Singh VK, Singh A, Kumar S. Epidemiology

- of Road Traffic Injuries in a Tertiary Care Centre of Lucknow. Indian J Community Health.2014;26(2):181-186.
10. Executive summary, Bangalore road safety and injury prevention program: result and learning 2010.
  11. Mehta SP. An epidemiological study of road traffic accident cases admitted in Safdarjang Hospital, New Delhi. Indian Journal of Medical Research. 1968;56(4):456-66.
  12. Sathiyasekaran BWC. Study of the injured and the injury pattern in road traffic accident. Indian Journal of Forensic sciences. 1991;5:63-68.
  13. Jolly MF, Fogging MP, Less BI. Geographical and socio-ecological variations of traffic accidents among children. Social Science and Medicine.1991;22(7):765-69.
  14. Tiwari RR, Ganveer GB. A study of human risk factors in non-fatal road traffic accidents at Nagpur. Indian J Public Health.2008;52(4):197-199.
  15. Bayan P, Bhawalkar JS, Jadhav SL, Banerjee A. Profile of non-fatal injuries due to road traffic accidents from a industrial town in India. Int J Crit Illn Inj Sci. 2013 Jan;3(1):8-11.
  16. Suryanarayana S, Gautham M, Manjunath M, Narendranath V. Surveillance of injuries in a tertiary care hospital. Indian J Community Med.2010 Jan;35(1):191-92.

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