



# **Epidemiological Study of Road Traffic Accident Cases Attending Tertiary Care Hospital of Kashmir: A Cross Sectional Study**

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## **Authors' contributions**

*This work was carried out by both the authors. Author MQ collected the data, designed the study and wrote the manuscript. Author AMY also collected the data, did analyses of the study and prepared the manuscript. Both the authors read and approved the final manuscript.*

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## **ABSTRACT**

**Background:** Road Traffic Accidents (RTAs) are an important cause of mortality and morbidity worldwide and are highly on rise. Its socioeconomic repercussions are a matter of great concern. In order to control the losses created due to RTA, it is important to study its causative factors.

**Aim and Objectives:** To study the various epidemiological factors related to road traffic accident cases.

**Methodology:** It was a Cross-sectional study that was conducted in two tertiary care hospitals of Kashmir (Government Hospital for Bone and Joint surgery, Barzulla and SMHS Hospital, Srinagar) from Oct 2018 to Nov 2018. Study participants were RTA patients coming to the Emergency of these two hospitals. A pretested semi-structured interview schedule was used to collect necessary information regarding the accident.

**Results:** RTAs affected mainly the people of productive age group (20-40 years) which were predominantly male. Approximately 1/6<sup>th</sup> of the victims were illiterate and 2/5<sup>th</sup> of the victims were unemployed. Most of the accidents occurred on Saturdays (26%) and Sundays (22.5%) while less number of accidents was reported on Tuesdays (5.0%) and Wednesdays (5.0%). Most of the

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accidents (39%) occurred between 16:01 to 20:00 hours. Use of Safety measures (helmet/seatbelt) was reported by only 24% of the cases. Two wheeler drivers were more (61.5%) involved in accidents (61.5%). Weather condition at the time of accident in majority of the cases (53.5%) was found to be sunny.

**Conclusion:** Most of the factors that are responsible for RTA and its multiple consequences are preventable. A comprehensive programme can reduce the prevalence of RTA to a great degree.

*Keywords: Road traffic accident; epidemiological study.*

## 1. INTRODUCTION

An accident has been defined as: "an unexpected and unplanned occurrence which may involve injury" [1]. And Road traffic accidents (RTAs) are defined as fatal or non fatal injuries incurred as a result of road traffic crashes. The crash is defined as a collision or incidence that may or may not lead to injury and is occurring on a public road and involving at least one moving vehicle [2]. Road Traffic Accidents tend to be the most serious problem worldwide. Various physical, psychological as well as monetary losses are associated with it. Worldwide, the number of people killed each year in road traffic accidents (RTA) is estimated to be almost 1.2 million, while as the number of injured could be as high as 50 million [3]. The Americans bear 11% burden of road traffic injury mortality [2]. In the present century, these accidents represent a major epidemic of non communicable disease. They are no longer considered accidental. They are part of the price that we pay for technological progress. Accidents have their own natural history and follow the same epidemiological pattern as any other disease -that is, the agent, the host and the environment that interact together to produce injury or damage [4].

Currently, motor vehicle accidents are ranked 9th based on disease burden and are projected to be ranked third in the year 2020. Nearly three fourth of deaths resulting from motor vehicle crashes occur in developing countries [5]. In India, over 80,000 people die in the traffic accidents annually, over 1.2 million are injured seriously and about 30,0000 are disabled permanently. Also for individuals more than 4 years of age, more life years are lost due to traffic accidents than due to cardiovascular diseases or neoplasm [6,7]. And the problem is increasing rapidly in developing countries [8]. The economic cost of road crashes and injuries is enormous. Estimates suggest that they cost low and middle-income countries between 1% and 1.5% of their gross national product (GNP) and high-income countries 2% of GNP [8]. Accidents, tragically,

are not often due to ignorance, but are due to carelessness, thoughtlessness and over confidence [9].

Injuries due to RTA depend upon a multiple factors-human, vehicular and environmental. The important factors are: human errors, poor traffic sense due to ignorance, mechanical fault of the vehicle, speeding and overtaking, poor road conditions, traffic congestion, less road exposure, unsafe condition of roads etc [10]. RTA occur more frequently in certain age-groups, at certain times of day and week and at certain localities. Some people are more prone to accidents than others and susceptibility is increased by the effect of alcohol and other drugs as well as physiological state such as fatigue. But majority of accidents are preventable. Hence the study was aimed at studying various epidemiological factors related to road traffic accident cases attending the tertiary care hospital of Kashmir.

## 2. MATERIALS AND METHODS

It was a Descriptive Cross-sectional study that was conducted in in two tertiary care hospitals of Kashmir (Government Hospital for Bone and Joint surgery, Barzulla and SMHS Hospital, Srinagar) from Oct 2018 to Nov 2018. A total of 200 RTA cases were interviewed during this period.

### 2.1 Study Participants

#### 2.1.1 Inclusion criteria

1. Road Traffic accident patients coming to emergency of the above mentioned hospitals.
2. Road Traffic accident patients who were conscious and cooperative.

#### 2.1.2 Exclusion criteria

1. Patients who met an injury on the road without the involvement of a vehicle (e.g. a person slipping and falling on the road and sustaining injury) or injury involving a

- stationary vehicle (e.g. persons getting injured while washing or loading a vehicle).
- 2. Patients who were brought dead.
- 3. Those not giving consent.

## 2.2 Data Collection

The RTA victims were interviewed to obtain the information about the circumstances leading to accident. A pre-tested semi structured proforma was designed and was used for interviewing the accident victims after obtaining a proper verbal consent. In situations where the condition of the victims did not warrant the interview, the relatives or attendants were interviewed. The information collected consisted of socio demographic characteristics, time, date, day and type of vehicles involved in RTA, site of RTA, Condition of road, Use of safety measures, presence of license, and weather condition at the time of accident. To facilitate the completion of the questionnaires and increase the guarantee of confidentiality of the data, we chose to assign a code rather than names to the questionnaire. The study has no ethical issue and ethical clearance has been obtained from Institutional Ethical Committee of Government Medical College Srinagar.

## 2.3 Statistical Analysis

Statistical analysis was done using SPSS version 25.

## 3. RESULTS

Total distributions of patients with respect to age group shows that highest number of patients was found in the age group of 20-40 years (44.5 %) and least was above 60 years age group (0.5%). Approximately 3/4th of the patients were males 1/3<sup>rd</sup> were females. Approximately 1/6<sup>th</sup> of the cases were illiterate and 2/5th of the cases were unemployed. Half of the cases were unmarried (Table 1). Most of the accidents occurred on Saturdays (26%) and Sundays (22.5%) while less number of accidents were reported on Tuesdays (5.0%) and Wednesdays (5.0%). Most of the accidents (39%) occurred between 16:01 to 20:00 hours and only 14% accidents during 20:01 to 00:00 hours (Fig. 1). More than half (68.5%) of the accidents occurred on Main roads and most of the times (73.5%) condition of the road was good (Fig. 2).

Among the patients who were driving the vehicle, 62.5% did not have driving license.

Helmet/Seatbelt was used by only 24% of the cases (Table 2). A high proportion of the patients were two wheeler occupants (61.5%) (Table 3). Weather condition at the time of accident in majority of the cases (53.5%) was found to be sunny (Fig. 3).

**Table 1. Sociodemographic characteristics of RTA patients**

Variable	Number (%)
<b>Age(years)</b>	
0-5	7(3.5)
6-10	7(3.5)
11-19	53(26.5)
20-40	89(44.5)
41-60	43(21.5)
>60	1(0.5)
<b>Gender</b>	
Male	143(71)
Female	58(29)
<b>Education</b>	
Illiterate	30(15)
Primary school passout	25(12.5)
Middle school passout	28(14)
High school passout	35(17.5)
Intermediate or diploma	52(26)
Graduate	25(12.5)
Professional degree	5(2.5)
<b>Employment</b>	
Employed	124(62)
Unemployed	76(38)
<b>Marital status</b>	
Married	97(48.5)
Unmarried	103(51.5)

**Table 2. Presence of a licence & safety measures used by RTA patients**

Presence of a license	No. (%)
Yes	75(37.5)
No	125(62.5)
<b>Helmet/Seatbelt usage</b>	
Yes	48 (24)
No	152(76)

**Table 3. Type of vehicle involved in RTA**

Type of vehicle	No. (%)
2-wheeler	123(61.5)
3-wheeler	13(6.5)
4-wheeler	64(32)

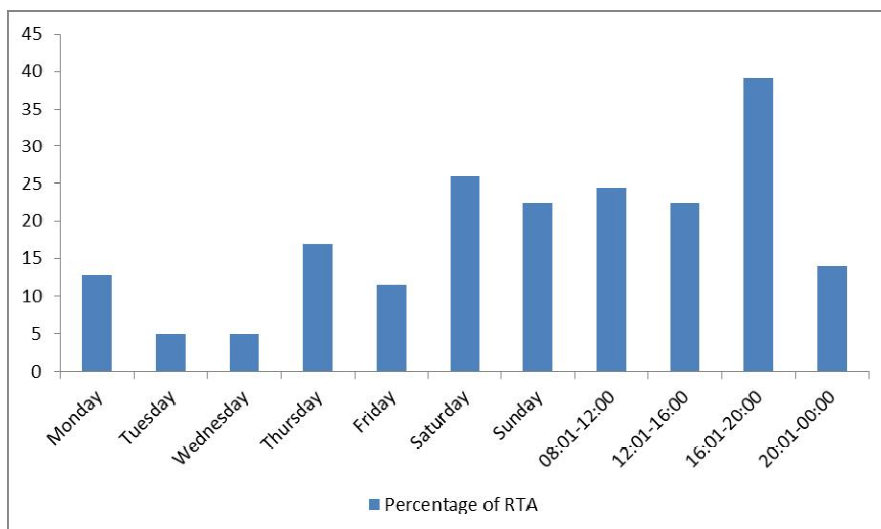


Fig. 1. Percentage of RTA as per day and timing

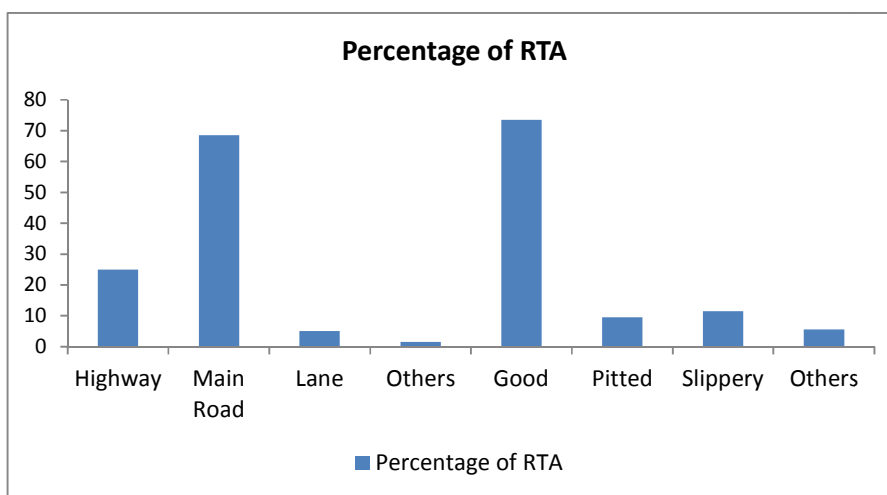


Fig. 2. Percentage of RTA as per type and condition of roads

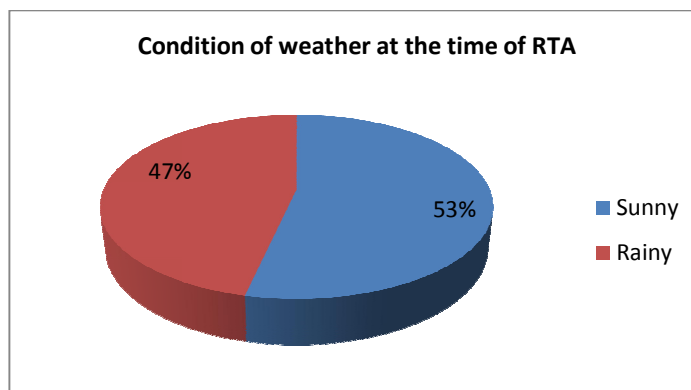


Fig. 3. Condition of weather at the time of RTA

#### 4. DISCUSSION

It is generally accepted that vehicle crashes cannot be prevented completely but that some of the injuries and severity can be prevented or minimized by simple protective ways such as using seat belts or helmets. Many factors are responsible for causing RTA such as condition of the road, driver's attitude, condition of the weather etc. This study determined the various epidemiological factors that contributed to RTA.

In the present study, we found that majority of the accidents (44.5%) were reported in the age group 20-40 years. Similar results have been shown in various other studies [10-13]. The cause behind this increased proportion of accidents in young age group may be attributed to the higher mobility of this age group and also high risk behaviour like driving in high speed which is common in this specific age group.

Males (71%) outnumbered females (29%) giving a male: female ratio of 2.4:1. This preponderance of males over females have also been observed in a study done by Dr. Archana Kual, et al. [10]. The high preponderance of males can be attributed to their high mobility, their high exposure to traffic along with their tendency to take risks. Approximately 1/6th of the victims were illiterate in our study. Similar results have been shown in another study [14]. It was found that more than half of the victims (51.5%) were unmarried. This could be attributed to the fact that marriage brings financial and psycho-social stability. However, these results are in contrast with a study where around 67 percent of the RTA victims were married [14].

In our study we found that most of the accidents occurred on Saturdays (26%) and Sundays (22.5%) while less number of accidents were reported on Tuesdays (5.0%) and Wednesdays (5.0%). This could be due to the increased movement of rural population from Srinagar to their home towns on weekends. These results are in contrast with a study which showed that majority of the accidents occurred on Tuesdays (19.9%) and Wednesdays (19.5%) while less number of accidents were reported on Saturdays (9.4%) and Sundays (10.5%) [14].

Most of the vehicular accidents (39%) happened between 16:01 to 20:00 hours (IST). This can be primarily explained by the fact that most of the government offices, educational institutions and business establishments close around this time,

leading to a heavy traffic rush within the city and around it. Another fact compounding this could be the early sunsets observed in the study area during the time of year in which this study was conducted, giving rise to glare due to increase usage of high beam vehicular headlights in evenings.

More than half (68.5%) of the accidents occurred on Main roads and most of the times (73.5%) condition of the road was good. These results are in agreement with another study [15].

Among the patients who were driving the vehicle, 62.5% were not have driving license.

Safety measures (helmet/seatbelt) were used only by 24% of the patients. The use of safety measures was in agreement with another study done by Chalya P, et al. [12]. This shows poor implementation of laws of road safety and again highlights the risk taking behaviour of young people. A high proportion of the patients were two wheeler occupants (61.5%). The reason could be less stability, high speed, restless driving and thrill seeking habit. Also in our study weather condition at the time of accident in majority of the cases (53.5%) was found to be sunny and similar results are shown in another study [15].

#### 5. LIMITATIONS OF THE STUDY

1. Since the study was limited for a very short duration we couldn't study the seasonal trend of RTAs.
2. Also the history regarding type and site of the injury was not taken.

#### 6. CONCLUSION AND RECOMMENDATION

The present study revealed that most of the accidents occur in the young age group, males and 2-wheelers. This situation can be improved by educating public through the mass media. This would also require IEC and BCC activities specially targeted towards young people as they share the majority of the burden of Road Traffic. Also a strict licensing policy and other safety rules (especially for 2-wheelers) should also be considered.

#### CONSENT

A pre-tested semi structured proforma was designed and was used for interviewing the

accident victims after obtaining a proper verbal and written consent.

### ETHICAL APPROVAL

The study has no ethical issue and ethical clearance has been obtained from Institutional Ethical Committee of Government Medical College Srinagar.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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