“Incidence Pattern and Determinants of Road Traffic Accidents in a Tertiary Care Hospital Based Study”

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Background: Injuries are increasingly recognized as a global public health epidemic. Around the world, almost 16,000 people die every day from all types of injuries. Injuries represent 12% of the global burden of disease, the third most important cause of overall mortality and the main cause of death among 1-40 year age groups. Methods: A prospective study was conducted at tertiary care SMHS hospital which is one of the associated hospital of Government Medical College Srinagar from 1st October 2017 to 30th June 2019. The study group consisted of all the Road Traffic Accident victims reporting to Accident & Emergency Casualty of SMHS in the above one year period. Results: A total of 115 who reported to causality of SMHS hospital in whom 73 (63.47%) were males and 42 (36.52%) were females, and most 33.91% of RTA victims of them belong to 21-30 year age group. Majority of the patients (93.92%) reported between 2-12 hours after the accident. Most of the victims (41.73%) presented during summer season. Head injury (28.69%) was the commonest injury sustained by RTA victims in our study followed by the spinal injuries (22.60%). Two wheelers (33.91%) were most common vehicle involved. Only 6.08% of the victims presented to the hospital within 1 hour of the accident. Conclusions: Most of the factors responsible for RTA and its fatal consequences are preventable. A comprehensive multipronged approach can mitigate most of them. Reliable data on deaths of pedestrians, bicyclists, motorcyclists and vehicle occupants are essential in the design and implementation of road safety programmes.

Keywords: Road Traffic Accident, Road traffic injuries, Trauma, Victims, Epidemiological factors.

INTRODUCTION

Expansion in road network, motorization, and urbanization throw out the world has been accompanied by a rise in road accidents leading to road traffic injuries (RTIs). Today RTIs are one of the leading causes of deaths, disabilities, and hospitalizations with severe socioeconomic costs across the world [1].

Injuries are increasingly recognized as a global public health epidemic. Around the world, almost 16,000 people die every day from all types of injuries. Injuries represent 12% of the global burden of disease, the third most important cause of overall mortality and the main cause of death among 1-40 year age groups [2]. The category of injuries worldwide is dominated by those incurred in road crashes. According to WHO data, deaths from road traffic injuries account for around 25% of all deaths from injury [2].

There is an accident every minute and death every 8 min. significant variations also arise between different states of India [16]. Injuries related to RTAs contribute significantly to the number of trauma admissions, taking out a significant number of lives and resources.

Road traffic injuries are currently ranked ninth globally among the leading causes of disability adjusted life years lost and the ranking is projected to rise to third [3, 4]. In 1998, developing countries accounted for more than 85% of all deaths due to road traffic crashes.
globally and for 96% of all children killed. Moreover about 90% of the disability adjusted life years lost worldwide due to road traffic injuries occur in developing countries [5, 6]. The problem is increasing at a fast rate in developing world [7]. Policy makers need to recognize this growing problem as a public health crisis and design appropriate policy responses [8]. The trend of increasing numbers of injuries is likely to continue as the number of motor vehicles rises, especially in countries with low numbers at present [9]. People in developing countries, which comprise 84% of the global population, currently own around 40% of the world’s motor vehicles [10]. It is estimated that 1.26 million people worldwide died in 2000 from road traffic accidents, 90% of them in low and middle income countries.

**METHODS**

A prospective study was conducted at tertiary care SMHS hospital which is one of the associated hospital of Government Medical College Srinagar from 1st October 2017 to 30th June 2019. The study group consisted of all the Road Traffic Accident victims reporting to Accident & Emergency Casualty of SMHS in the above one year period.

For the purpose of the study, a Road Traffic Accident (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. Any injury on the road without 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).

Data gathered included demographic details, the time of injury, nature of injury, type of the vehicle and the region of body injured. Also recorded were whether the injured person was the driver or the occupant of the vehicle or a pedestrian. The medico-legal records and case sheets were referred for collecting the data. Interviews of the victims/attendants and accompanying police personnel were also conducted to supplement the information collected.

Data was collected according to a predesigned and pretested proforma. All the data were analyzed using SPSS version 20 software and frequencies and tabulations were determined.

**RESULTS**

**Observations and Results**

A total of 115 road traffic accidents were reported in the Accident and Emergency Department of SMHS Hospital.

![Table-1: Genderwise Distribution](image)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>73</td>
<td>63.47%</td>
</tr>
<tr>
<td>FEMALE</td>
<td>42</td>
<td>36.52%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>115</td>
<td>100%</td>
</tr>
</tbody>
</table>

Majority of the victims were males accounting for about 63.47% of the victims as compared to females accounting for about 36.52% of the victims among the study population.

![Table-2: Age wise distribution](image)

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>9</td>
<td>7.82%</td>
</tr>
<tr>
<td>11-20</td>
<td>23</td>
<td>20.0%</td>
</tr>
<tr>
<td>21-30</td>
<td>39</td>
<td>33.91%</td>
</tr>
<tr>
<td>31-40</td>
<td>16</td>
<td>13.91%</td>
</tr>
<tr>
<td>41-50</td>
<td>13</td>
<td>11.30%</td>
</tr>
<tr>
<td>51-60</td>
<td>8</td>
<td>6.95%</td>
</tr>
<tr>
<td>&gt;60</td>
<td>7</td>
<td>6.08%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>115</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most of the victims were young belonging to the age group of 21-30 years (33.91%) followed by age group of 11-20 years (20.0%) , 31-40 years (13.91%), 41-50 years (11.30%), 1-10 years (7.82%), 51-60 years (6.95%) and the least victims were >60 years of age among the study population.

![Table-3: Geographical Distribution](image)

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>URBAN</td>
<td>62</td>
<td>53.91%</td>
</tr>
<tr>
<td>RURAL</td>
<td>53</td>
<td>46.08%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>115</td>
<td>100%</td>
</tr>
</tbody>
</table>
Majority of the victims were belonging to urban area (53.91%) and (46.08%) belonging to rural area among the study population.

Majority of the accidents (45.21%) took place between 12 pm - 6 pm followed by 6pm-12am (27.82%) and least accidents 12-6am (10.43%) Fig 1.

Most of the RTA victims reported to the hospital between 1-2 hours (32.17%) after the accident followed by 2-4 hours (20.0%) after the accident. Only 6.08% of the RTA victims reported within an hour of the accident. Fig 2

Most of the RTA victims (41.73%) presented during summer season followed by (26.95%) during autumn, (18.26%) during spring and (13.04%) during winter Fig 3.

Head injury (28.69%) was the commonest type of injury sustained followed by spinal injury (22.60%), chest injury (16.52%), abdominal pelvic injury (13.91%), lower extremity injury (10.43%) and (7.82%) upper extremity injury among the study population Fig 4.

Two wheelers (33.91%) were most commonly involved followed by light motor vehicles (26.08%), three motor vehicles (20.86%) and (19.13%) heavy motor vehicles among the RTA victims in the study population Fig-5.

(33.91%) of TRA victims were unknown about the conditions of the road and only 34.78% were aware about the conditions of road. Fig 6
Majority (31.16%) of the road traffic accidents took place on highways followed by main roads (14.88%) and (7.44%) on other roads Fig 7.

DISCUSSION

The present study was conducted at the tertiary care SMHS hospital which is one of the associated hospital of Government Medical Collage Srinagar (J & K). The study group consisted of all the Road Traffic Accident victims reporting to Accident & Emergency Casualty of SMHS in the one year period in which injured person were 115 who reported to causality of SMHS hospital in whom 73 (63.47%) were males and 42 (36.52%) were females, and most 33.91% of RTA victims of them belong to 21-30 year age group. The similar study conducted by Manish Kumar, Anjana Niranjan et al. in 2016 [34] at the tertiary level S.G.M.H hospital Rewa Madhya Pradesh, India. According to the findings of this study, that 325 RTA was occurred in the year 2015 in which injured person were 412 who visited to causality of S.G.M.H Rewa. in whom 298 (72.33%) were males and 114 (27.66%) were females, distribution of RTA between males and females was highly significant because p<0.0001 it was less than 0.04 and most 42.09% of RTA victims of them belong to 21-40 year age group. The similar findings were also reported from Delhi and Nepal [35-37]. About 55% of the victims were between ages of 21-40 years. This shows that the people of the most active and productive age group are involved in RTAs, which adds a serious economic loss to the community. Lower proportion of RTAs in those aged 60 and above could be due to the generally less mobility of the people. A high occurrence of road traffic accidents among young adults has been thought to be due to wider range of activities engaged in by this class of people. They are more likely to have reasons to move from one place to another. The accident rates were higher in males (82.1%) than in females according to this study. Similar results were also observed in by other researchers [38-40]. Males are much more exposed to RTAs than females. This may be due to the fact that males are more active than females in various outdoor activities.

In the present study, the peak time for accidents was between 12 Pm- 6 Pm (45.21%). The findings are consistent with study of SP Mehta [36] conducted in Delhi. The hours are the busiest as commuters return from the schools, offices, factories and business place. These times coincide with the period when people are more active and mobile. In present study only 6.08% of the road traffic accident victims reported to hospital within less than one hour of the accident. Majority of the patients (93.92%) reported between 2-12 hours after the incident. The initial one hour is regarded as the “Golden Period” in the management of trauma victims. In majority of the cases the patients reached the tertiary care trauma centre i.e. SMHS after 2 hours of the accidents. Precious time is being lost in transporting the patient which has an adverse effect on the outcome. Hence, advanced trauma centres at should be established along the highway so that adequate and timely care reaches to the critical sick accident victims.

In the present study 41.73% of the road traffic accident victims reported during the summer months. It can be explained by the fact that summer months are full of activities in Kashmir. It is the tourist season in the valley and thousands of vehicles are added to the roads in these months leading to increased incidences of road traffic accidents. Head injury (28.69%) was the commonest injury sustained by RTA victims in our study followed by the spinal injuries (22.60%). The similar study conducted by Mohammed Sarwar Mir, Tufail Ahmad et al. in 2016 [33] in this study 54.74% of the road traffic accident victims reported during the summer months. (35.44%) victims with Head injury and (17.16%) with spinal injuries due to RTA. our findings are also consistent with the studies of other researchers [41, 42].

Similarly a study was conducted by Singh R et al. was found that out of total 347 victims, 258
(74.35%) were males, while only 89 (25.65%) were female subjects [36]. Highest numbers of victims were in 20-30 years age group, accounting for 141 (40.63%) patients and various factors were attributed to the causation of these injuries as that maximum number of accidents took place during winter season (35.16%) and on national highway (69.50%). A total of 10 (3.88%) injured patients were intoxicated with alcohol at the time of accidents, all males.

The present study suggests that majority of the RTA victims had no protective measures like helmets for two wheeler vehicles and seat belts in light motor vehicles which have resulted in increased incidences of neurotrauma. Occupants (41.73%) constituted largest group of injured victims. The results are consistent with the findings of Morid M Hanna et al. [43]. The findings suggest that majority of the occupants of the vehicles do not take any personal protective measures while travelling. Two wheelers (33.91%) were the most common vehicles involved in road traffic accidents followed by light motor vehicles (26.08%) in this study. The findings are similar to the study of S.V Kuchewar et al. [44]. The findings can be explained by the fact that there has been an explosion in number of motorbikes, scooters and cars on the roads of Kashmir valley. Increase in number of young drivers often without valid driving licenses has created havoc on the roads.

REFERENCES