Research Article

Reasons for road traffic accidents—victims' perspective

Jatinder Singh[1], Manjote Kour Sahni[2], Safoora Bilquees[1], S.M Saleem Khan[1], Inaamul Haq[1]

[1]Department of Community Medicine, Government Medical College, Srinagar, Jammu & Kashmir, India.
[2]Medical Officer, Ramakrishna Mission, Srinagar, Jammu & Kashmir, India.
Correspondence to: Jatinder Singh, E-mail: jatinron@gmail.com

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Abstract

Background: Worldwide, the number of people killed in road traffic accidents each year is estimated at almost 1.2 million, whereas the number injured is believed to be as high as 50 million—the combined population of five of the world's large cities.

Objective: To find out the reasons leading to road traffic accident in the opinion of the road traffic accident victims.

Materials and Methods: It is a descriptive study performed in two tertiary health-care delivery institutes in Kashmir. It included 316 victims of road traffic accidents who reported to BJH & SMHS hospitals in 1 year period. Demographic characteristics of the victims, time, day, and month of accidents were the variables studied. Other study variables included were category of road users involved in road traffic accidents and reasons of accidents in the opinion of the accident victims. Data collected was analyzed in terms of proportions and percentages.

Result: There were 80.7% male and 19.3% female accident victims. Students were the maximum (22.2%) among the victims. Majority of accidents occurred in the second quarter 100 (32%) of the year whereas the first quarter experienced the least 51 (16%) accidents. Those driving the vehicles constituted the largest (44.9%) of the victims followed by pedestrians (31.6%). Among the motorized vehicles, two wheeler drivers were more (44.3%) involved in accidents. The most common substance abused was tobacco 148 (46.8%) whereas alcohol abuse was seen in only 2 (0.6%) cases.

Conclusion: Road crash injury is largely preventable and predictable since it is a human-made problem hence is amenable to rational analysis and countermeasure.

KEY WORDS: Road crashes, traffic, accidents, seat belts

Introduction

Thousands of people are killed and injured on our roads every single day. Men, women or children walking, biking or riding to school or work, playing in the streets, or setting out on long trips may never return home and would leave behind shattered families and communities. Millions of people each year would spend long weeks in hospital after severe crashes and many may never be able to live, work, or play as they used to do. Existing efforts to address road safety are nominal in comparison to this growing human suffering.[1]

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The social, economic, and psychological hardships are unmeasured in the South-East Asia region and it is estimated that nearly 3% GDP is lost due to road traffic injuries alone. Correspondingly, the health systems in these countries are not geared to handle this emerging problem. This has resulted in a huge burden on health-care systems, which are already overburdened due to various deficiencies.

India is undergoing tremendous pace of development during the last decade or so and is now under the increasing threat from both communicable and noncommunicable diseases. With the increasing sociodemographic transition, booming economy, and technological advances there has been increasing industrialization and urbanization. An increased economic spending capacity with more affordability of vehicles there has been an unprcedented increase in the number of incidents from road traffic accidents (RTAs) and the injuries thus caused.[2]

About 120,000 people died on the road in India every year. Although India has only 1% of the world's motor vehicles, but it accounts for 6% of the global road traffic deaths.[3] What is

worse, without increased efforts and new initiatives, the total number of road traffic deaths worldwide and injuries is forecast to rise by some 65% between 2000 and 2020 and in low- and middle-income countries deaths are expected to increase by as much as 80%.[1] This study was undertaken to study the reasons leading to RTAs in the opinion of the RTA victims.

Materials and Methods

This study was a cross-sectional observational study conducted in two tertiary health-care delivery institutes in Kashmir valley, the government Bone and Joint Surgery Hospital Barzulla and the SMHS Hospital Srinagar. Both are associated with the government medical college, Srinagar. The study period was conducted for a period of 1 year from April 1, 2011 to March 31, 2012. RTA was defined for the purpose of this study as "an accident which took place on the road between two or more objects, one of which had to be a moving vehicle and the other a human being." Those RTA victims who visited the above mentioned hospitals and were retained there for overnight or more were only included in the study. The following RTAs were excluded from the study: any injury on road occurring without the involvement of a vehicle (e.g., a person slipping and falling on the road and sustaining injury). Any injury on road occurring with involvement of a stationary vehicle (e.g., a person getting injured while washing or loading a vehicle). RTA victims or the attendants of critically injured victims who did not consent for the interview and the fatally injured RTA victims. The study group comprised of the 316 RTA victims who reported to these hospitals in the above 1 year period. These victims of the traffic accidents were interviewed to obtain information about the circumstances leading to the accident and where the condition of the victims did not warrant the interview, the relatives, or attendants of the victim were interviewed. Data collected was arranged in a tabulated form and analyzed using appropriate statistical techniques and inferences were arrived.

Result

Major category of road users were drivers 142 (44.9%) followed by pedestrians 100 (31.6) and simple occupants 74 (23.4%). Protective gear was used by only 31% (32) drivers whereas rest 69% (71) did not use anything. None of the passengers used any form of protective gear. Overall around 80% vehicle occupants did not use any form of protective gear.

Among the drivers injured in RTAs, 34 were bicyclists who did not require a license and of the remaining, 55.5% ($n = 108$) had a valid driving license whereas 44.5% had none. The drivers having 1-5 years driving experience 68(47.9%) formed the major group followed by the drivers having >5 years of driving experience 59(47.9%). Drivers having <1 year driving experience comprised of only 10.5% (15).

More than half of the vehicles 265(57.6) involved in RTAs appeared in bad condition and poorly maintained whereas 195(42.4%) were in good condition and well maintained. Most of the pedestrians were injured whereas they were simply walking on road 53(53%) followed by those who were injured while crossing the road 25(25%). In addition, 15 (15%) were injured while they were just standing on road and 7 (7%) while running on road.

Cell phone use at the time of RTA was reported in only 38 (12%) victims. The most common mode of accident observed in the study was collision 135 (42.7%) followed by knocked down 95 (30.1%) and falling down 35 (11.1%). Overturning of the vehicle and run over were reported in equal number of RTAs 15 (4.7%), whereas 9 (2.8%) reported hitting an object as the mode of accident.

Most of the RTAs occurred on clear and sunny days 180 (57%) followed by cloudy days 80 (25.3%). It was raining at the time of accident in 28 (8.9%) and snowing in 6 (1.9%) cases. Dark and dim light in the late hours of the day was reported in 22 (6.9%) cases.

Most of the RTAs occurred on main roads 191 (60.4%) followed by highways 37 (11.7%), crossings 32 (10.1%), by lanes 30 (9.5%), and intersections 24 (7.6%). Only 2 (0.65) RTAs were reported from market place. Majority of the RTAs occurred on the macadamized roads 292 (92.4%), whereas 20 (6.3%) occurred on semi pucca gravel roads and only 4 (1.3%) occurred on kucha earthy roads.

The surface condition of the roads at the site of RTAs in 161 (51%) cases was good and well–maintained, whereas in 155 (49%) cases it was rough and poorly maintained. The most apparent cause of RTA in the opinion of the victims was unsafe acts of the driver 287 (90.8%) and unsafe conditions of the road 148 (46.8%), followed by unsafe condition of vehicle 60 (18.95) and bad weather condition 50 (15.85%).

In the opinion of the victims, the most common unsafe conditions of vehicle as an apparent cause of the RTA was defective braking 17 (5.4%), bad condition of vehicle 10 (3.2%), and defective tyres 9 (2.8%) (Table 1). The major unsafe acts of driver in the opinion of the victims included inappropriate speed 162 (51.2%), reckless driving 95(30%), failure to observe clearance (22.1%), and improper turning 46 (14.6%) (Table 2).

In the opinion of the victims the most common unsafe condition of the road as an apparent cause of the RTA was bad condition of road surface 47 (14.9%) followed by water/snow logged roads 27(8.5%), obstacles on road 25 (7.9%), and debris on roads 23 (7.3%) (Table 3).

Discussion

In this study, it was seen that the males accounted for around 81% RTAs, outnumbering the females in a ratio of 4.2:1. Similar results also were reported from many other parts of the country and Nepal.[3-6] Similarly, Nasrullah et al., in their study in Karachi, Pakistan found that males outnumbered females by a ratio of 4:1, and accounted for around 81% RTA victims.[7] Similar results were also reported from Kenya.[8] However, in another study by Shamim and Razzak et al., it was found that 89% victims were male.[9] The reason

may be that males are more mobile and more exposed to roads and RTAs than females.

In this study, the highest number of RTA victims (37.3%) were found to be young people in the age group of 15-30 years and around 71% victims were in the age group of 15-45 years. Similar results were reported from Nepal, New Delhi, and other parts of the country and Kenya.[3-5,8] This depicts that people in most active and productive age group are involved in RTAs.

In this study we also observed that students constituted the largest group (22%) involved in RTAs followed by people who were employees in service (19%) or engaged in business activities (17%). Laborers accounted for around 10% victims and rest all constituted around 30%. In a study from South India, it was observed that laborers constituted the largest group accounting for around 30% victims whereas those employed in service and students followed with 22% and 16% of the victims, respectively. In another study, students formed the largest group of the RTA victims followed by the group comprising of the people working as laborers.[5] The reason may be the more impulsive behavior and a higher level of physiological excitement associated with younger people like students and so more exposed to road vulnerabilities.

The most common substance abused observed in the RTA victims was tobacco 148 (46.8%), whereas alcohol abuse was seen in only 2 (0.6%) cases who were drivers. Nilambar jha et al. in there study reported that around 15% drivers were found to have consumed alcohol.[4] In another study, it was observed that 46% drivers had some evidence of alcohol consumption of which 84% succumbed to their injuries.[6]

Among the vehicle occupants, drivers formed the majority 65% (71) whereas rest 45% (53) was constituted by the passengers. Protective gear was used by only 31% (32) drivers whereas rest 69% (71) did not use any. None of the passengers used any form of protective gear. Overall around 80% vehicle occupants did not use any form of protective gear. Among the drivers and the occupants of the vehicles around 41% vehicles were motorized two wheelers and of these only 25% used helmets and the rest did not use any protective gear. In the study from South India, it was reported that none of the victims used any protective gear.[4]

Among the RTA victims, the major category of road user was that of drivers 142 (44.9%) followed by pedestrians 100 (31.6), and passengers 74 (23.4%). Similar pattern was also observed in studies from other parts of the country.[3,4]

Among the drivers injured in RTAs 35 were bicyclists who did not require a license and of the remaining, 55.5% (n = 108) had a valid driving license, whereas 44.5% had none. However, proportion of drivers without driving license is quite high compared to studies from Delhi and South India.[4,5] The reason could possibly be good socioeconomic background, so the easy accessibility of vehicles and the casual attitude of drivers toward obtaining licenses.

Motorized two-wheeled 146 (31.7%) and four-wheeled LMVs 134 (29.1%) were the most common vehicles involved in RTAs followed by trucks 66 (14.4%), bicycles 36 (7.8%), buses 28 (6.1%), mini-buses 26 (5.6%), and three wheelers 18 (4%). Furthermore, it was observed that vehicle occupants constituted the vast majority (68%) of the victims in this study where 45% were drivers including bicyclists and 23% constituted passengers. Similar results were reported from Haryana and Aligarh where it was found that motorized two wheelers were the most common among the vehicles involved in traffic accidents.[6,10] However, bicycles followed by trucks and buses were reported as the major vehicles involved in few studies from other parts of the country.[4,11] The reason for this could be the differentness in the availability and accessibility of public and private transport facilities throughout the country. The reason for major involvement of motorized two wheelers in traffic accidents could be the less stability of the vehicle and the high pick up speed that can be attained over short distances.

Trucks and light motor vehicles were responsible for majority of pedestrian injuries 67% (67) followed by buses 13% (13), motorized two wheelers 10% (10), and three wheelers 9% (9). Most of the pedestrians were injured while they were simply walking on road 53 (53%) followed by those who were injured while crossing the road 25(25%). It was further observed that most of the pedestrians were injured while they were walking or running on wrong side of the road 47(78.3%). Lack of sidewalks along with ignorance on part of the pedestrians could be the reasons for the risky behavior of the pedestrians. Cell phone use at the time of RTA was reported in only 38 (12%) of victims.

Majority of accidents occurred in the second quarter 100 (32%) of the year whereas the first quarter experienced the least 51 (16%) accidents followed by the third and the fourth quarters which experienced almost the same number of accidents 84 (26%) and 81 (25%), respectively. Moreover, most of the RTAs occurred on clear and sunny days 180 (57%) followed by cloudy days 80 (25.3%). It was raining at the time of accident in 28 (8.9%) and snowing in 6 (1.9%) cases. The results, however, differed from other studies.[4,5,11] The possible reasons for the variation could be the different topography and the seasonal variations. Majority of the accidents 122 (39%) occurred between 4 and 8 pm followed closely by those occurring between 8 to 12 am, 120(38%). Minimum accidents were noticed between 4-8 am, 7(2%) and 8-12 pm, 12(4%), whereas almost negligible accidents 2 (0.6%) occurred between 12 and 4 am. Similar results were reported by others as well.[6,12]

The reason could be that these hours are heavy traffic hours as commuters go to or return back from offices schools, tuitions, and business establishments. The surface condition of the roads at the site of RTAs in 161 (51%) of cases was good and well–maintained, whereas in 155 (49%) cases it was rough and poorly maintained. Furthermore, most of the RTAs occurred on main roads 191 (60.4%) followed by highways 37 (11.7%), crossings 32 (10.1%), by lanes 30 (9.5%), and intersections 24(7.6%) while as most of them occurred on the macadamized roads 292(92.4%), whereas very few were reported from semi pucca gravel roads and kucha earthy roads. This may reflect better road connectivity in the state.

Table 1: Unsafe conditions of vehicle as an apparent cause of the road traffic accident as perceived by the victim*

Unsafe condition of vehicle	Frequency (*n*)	Apparent cause (%)
Defective braking	17	5.4
Vehicle in bad shape	10	3.2
Defective tyres	9	2.8
Defective turn signal	6	1.9
Inoperative lights	6	1.9
Inoperative horn	3	1.0
Others**	11	3.5
None	254	80.4

*Multiple responses.
**Poor visibility, vapor formation on windshield, overcrowding in vehicle.

Table 2: Unsafe acts of driver as an apparent cause of the road traffic accident as perceived by the victim*

Unsafe acts of driver	Frequency (*n*)	Apparent Cause (%)
Inappropriate speed	162	51.2
Reckless driving	95	30.0
Failure to observe clearance	70	22.1
Failure to signal intentions	58	18.3
Improper turning	46	14.6
Following too close for condition	12	3.8
Improper overtaking	12	3.8
Wrong side driving	9	2.8
Distraction	7	2.2
Improper backing	4	1.2
Personal impairment	1	0.3
Others**	44	13.9
None	29	9.2

*Multiple responses.
**Lost control, applied sudden brakes, sudden lane change, sudden turning, learning driving.

Table 3: Unsafe conditions of road as an apparent cause of the road traffic accident as perceived by the victim*

Unsafe condition of road	Frequency (*n*)	Apparent cause (%)
Bad road surface	47	14.9
Water/snow logging on roads	27	8.5
Obstacles on road	25	7.9
Debris on road	23	7.3
Narrow and congested road	21	6.6
Improper road illumination	11	3.5
Pot holes	9	2.8
Unmarked speed breakers	4	1.3
Overgrown trees and foliage on roads	4	1.3
Others**	42	13.3
None	140	44.3

*Multiple responses.
**Sloppy road, sharp turns, roadside occupancy, roadside parking, curved road, slippery road, long turns, wrong parked vehicles, confusing crossing, lack of pavements.

More than half of the vehicles 265(57.6) involved in RTAs appeared in bad condition and poorly maintained whereas 195 (42.4%) in good condition and well-maintained. Similarly Mishra et al. in their study found that 66% vehicles involved in RTAs were old and ill-maintained.[6]

The most common mode of accident observed in the study was collision 135 (42.7%) followed by knocked down 95 (30.1%) and falling down 35 (11.1%). Overturning of the vehicle and run over were reported in equal number of RTAs 15 (4.7%) whereas 9 (2.8%) reported hitting an object as the mode of accident.

Jha[12] found that the most common mode of sustaining injury was knocked down by a vehicle followed by collision and falling down. Speed could be the reason. Speed limits have been set here for different road locations and people need to strictly follow them.[13]

The most apparent cause of RTA in the opinion of the victims was unsafe acts of the driver 287 (90.8%) and unsafe conditions of the road 148 (46.8%), followed by unsafe condition of vehicle 60 (18.95) and bad weather condition 50 (15.85). The reason for this may be that in most of the traffic accidents fault of any driver behind wheels on the road can jeopardize life of others even if they may commit no mistake on road either as drivers or passengers or pedestrians. This reinforces the famous dictum that says, watch others while you drive. Of course properly designed and constructed roads play a great role in prevention of RTAs. Condition of road is a major factor in the occurrence of accidents badly constructed speed-breakers not properly highlighted, presence of obstacles, debris, open pot holes are few of the conditions that can result in a crash even if the driver is moving on road without any fault in his driving. Furthermore, the more important part is the upkeep and timely maintenance of the roads. Ply-worthy roads are considered a prerequisite for effective prevention of RTAs.[14]

Another important factor is the condition of the vehicle. In today's world where we have an unprecedented increase in the volume of vehicles relative to the capacity of roads we need to be have our vehicles equipped with properly functioning gadgets such as brakes, horns, turn signals, half painted head lights, etc. Not only that our vehicles should be equipped with them but all the people on roads especially those behind wheels should be well-versed with their use. So educating people especially drivers visa-viz the proper use of these technologies can play a major role in reducing accidents on our roads.

Conclusion

Common driving errors and casual pedestrian behaviour leads, unfortunately, to death and serious injury in road traffic accidents. Road safety education is therefore the need of the hour. Furthermore, good roads designed keeping also in view the rights of the pedestrians to walk, well maintained vehicles and a good traffic system can in a major way prevent this human made problem.

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