Original Article

Road Traffic Injury Trends in Lucknow Region: A Retrospective Observational Study

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Abstract

Introduction: Over the last few decades, road accidents have become one of the biggest problems worldwide. Despite improved road infrastructure and potential measures to address the problem, developing countries are experiencing an alarming increase in morbidity and mortality from accidents for pedestrians, drivers, and passengers. Most of the cars involved in accidents involved pedestrians and passengers. Pillion riders are the most common. To find ways to prevent these traffic accidents, this study aims to identify many types and patterns in pedestrian, driver, and passenger accidents.

Aim: To understand the pattern of Injuries in Road Traffic Accidents and to prevent associated morbidity and mortality.

Method: 1085 instances in all were utilized for the investigation, and information was gathered from the Dr. Ram Manohar Lohia Institute of Medical Sciences Emergency Department, records, and police records for the six months from October 2022 to March 2023.

Result: Male Pillion Riders of the group of 15-35 years without wearing Safety precautions and having been drunk were most common among the affected.

Conclusion: Education, adherence to traffic regulations, road improvement, and instruction on safety precautions like wearing helmets or seat belts while traveling can minimize the risk associated with RTA.

Keywords: Pedestrian, riders, pillion riders, Road traffic accidents, Head injury, Chest injury, Skull fracture, Multiple injuries.

Introduction

A road traffic accident (RTA) is defined as "an occurrence on a route or street open to public traffic, when at least one moving vehicle is involved, resulting in one or more individuals being hurt or killed." [1] Therefore, a road traffic accident (RTA) is a collision involving two or more moving objects, such

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as a vehicle and a pedestrian, an animal, or a physical structure. Human tragedy often results from road accidents. They cause significant human misery as well as huge social costs due to early deaths, injuries, lost productivity, and other factors. [2] According to the 2013 Global Status Report on Road Safety, 1.24 million people die in motor vehicle accidents each year, an unacceptable number worldwide. [3]Young persons aged 15 to 29 die most frequently from traffic-related injuries. The majority of persons who pass away on roads across the world are elderly people, children, walkers, cyclists, and children, making up the most vulnerable road users. [4] India is no different, as data revealed that over 1.3 lakh individuals lost their lives on Indian roads, earning India the terrible distinction of leading the world in terms of deaths from traffic accidents. [5] People in their prime earning years make up the majority of those who are harmed or killed. Poor people, who are disproportionately more likely to be pedestrians, bikers, and passengers on buses and mini-busses, bear the brunt of injuries and fatalities.[6] Speed, alcohol, seat belts, helmets, child restraint seats, and visibility were the five main risk factors for road injuries identified by the WHO [7]. We must slow down since the speed limit is referred to be "the bandmaster of the road disaster orchestra." Deathly accidents are caused by speeding; the quicker a vehicle is moving, the greater the impact. Up to one-third of RTAs are contributed by speed. [8] Researchers proposed more stringent alcohol limits for young or inexperienced drivers to ultimately lower RTA. Following police and hospital emergency reports that alcohol was a significant factor in RTA, India implements random breath testing at police checkpoints as well as breath and blood testing of all drivers involved in accidents. [9] In addition to other traffic safety measures, seat belts offer 40% to 65% protection against serious mortality or serious injury. Failure to utilize a safety belt may enhance the chance that someone may be fatally injured by accidentally being flung out of, smashing within, or going through a windshield, even when this is not the cause.[10] [11] According to the United Nations Motorcycle Helmet Study (2016), motorized two-wheeler motorcyclists have a 26 times higher risk of dying in a traffic accident than four-wheelers. Proper use of the finest available helmets increases survival by 42% and decreases injuries by 69%. [12] [13] The participants acknowledged engaging in avoidable risky behaviors while driving, such as speaking on speaker phones (73.44%), making calls (87.21%), and listening to music (49.84%). A smaller percentage (4.92%) admitted to watching videos and using Bluetooth headphones (11.80%), and as a result, 71.80% of the participants admitted to missing road signs. [14] [15] This paper focuses on investigating the types of injuries associated with RTA.

Methods

This cross-sectional descriptive study was conducted from October 2022 to March 2023.at the Emergency Department, DRRMLIMS Lucknow. A total of 1085 cases were used for investigation and data collection Cases were picked after considering the inquest findings. Initial data on the deceased's medical background and other personal data were acquired from In-depth interviews were done with the police officer in charge, any witnesses who were there when the incident occurred, and anybody else who had direct knowledge of it while he was away. The incident's history was compiled, including details on the pedestrian involved at the time, the condition of the road, the weather, etc. Data from hospital records and inspector interviews at the mortuary served as the basis for the investigation.

Inclusion Criteria

1. All instances of injury from a pedestrian, two-wheeler, Four -Wheeler, and other accidents that were reported to the emergency Medicine RMLIMS Lucknow within 24 hours.

Exclusion Criteria

Cases of road traffic injuries that have been treated by another hospital for longer than 24 Hours duration.

Findings

In all, 1085 RTA victims visited the Dr. Ram Manohar Lohia Institute of Medical Sciences Department of Emergency Medicine between October 2022 and March 2023. 74.6 percent of them were male, and 25.3 percent were female. The majority of victims were in the age group of 15–35 years. The maximum and lowest ages of the victims were 15 years and 85 years respectively. 50% of events took place between

noon and 6 o'clock to 10 o'clock. The most common victims were pillion riders and car riders. Those victims who were not wearing helmets or seatbelts were the most affected. The most frequent kind of head injury is an abrasion, which is then followed by cranial cleft fractures, which most frequently involve the frontal bone and account for 40% or more of all frontal bone fractures of the scalp. Having seen Subdural hemorrhage was the most typical kind of bleeding. Using the most recent software, collected data were recorded into a Microsoft Excel spreadsheet and examined for frequency and percentage. Tables and graphs are used to show the collected data.

Table 1: Sex-wise distribution of RTA victims and Age-wise distribution of RTA victims

Sex	No. of cases	Percent	Age Group	No. of cases	Percentage
Male	810	74.65%	15-35	466	43.14%
Female	275	25.34%	36-55	297	27.5%
Total	1085	100	56-65	181	16.75%
			66-75	79	7.31%
			76-85	57	5.27%
			Total	1085	100%

Interpretation

Among 1085 cases of Road Traffic Accidents, this study indicates 810 cases (74.65% %) were male victims and 275 cases (25.34%) were female victims. Male victims were Approx three times greater in number than females. From the study population in Road Traffic Accidents, it was observed that the maximum number of deaths due to Road Traffic Accidents occurred in the age group of 15-35 years 43.14% of total cases Examined.

Table 2: Distribution of pedestrian, rider, and pillion rider incidence of head injuries among helmet wearers and non-wearers

Occupants	Number of cases	Percentage	Protective measures	Number of Head injuries Cases	Percentage
Pedestrian	130	11.98%	With Helmet	226	36.044%
Bike Rider	261	24.055%	Without helmet	401	63.955%
Pillion Rider	366	34%	Total	627	100%
Car Rider	328	30.23			
Total	1085	100%			

Interpretation

This shows that the incidence of accidents among Pillion riders was the maximum which accounts for 366 cases (34ith compared to car riders (328 cases), bike riders (261 cases), and pedestrians (130 cases). And another graph indicates that most of the victims were bike riders and pillion riders who were not wearing helmets. Almost 401 cases (63.955%) were not wearing helmets and only 266 (36.044%) victims were wearing helmets.

Table 3: injuries related to seatbelt use in a four-wheeled vehicle

Protective measure (Seat Belt)	Number of Cases	Percentage
Bearing	133	40.5487%
Not Bearing	195	59.451%
Total	328	100%

Interpretation

This demonstrates that 195 victims (64%) did not use seat belts, whereas just 133 instances (36%) did so while operating the vehicles.

Table No 4-Incidents due to Consumption of Alcohol, Drugs & Substances

Consumption of Alcohol and other substances	Number of Cases	Percentage
Alcohol Consumption	369	34.00
Illicit Drugs Substances	103	9.49
Pharmaceutical Drug Intake	260	23.96
No Consumption	353	32.53
Total	1085	100%

Interpretation

This suggests that 732 instances, of all victims, were involved in the consumption of alcohol and other substances while driving, whereas 353 cases were involved in no alcohol or other substances use.

Table 5: Distribution of Injury

Distribution of Injury	Number of Cases	Percentage %
Head	53	4%
Legs	413	38.06%
Hand	387	35.66%
Shoulder	147	13.54%
Abdomen	85	8%
Total	1085	100%

Interpretation

According to statistics used in this demonstration, the majority of RTA victims suffer from leg injuries 413 (38.06% followed by hand injuries 387 (35.66%).

Table 6: Fatality factor of Distribution of Injury

Distribution of Injury	Fatal	Percentage % fatal Factor in Distribution of Injury
Head and Neck	765	70%
Chest	275	25.35%
Abdomen	73	6.72%
Shoulder	39	3.59%
Legs	2	0.184%
Hand	3	0.276%
Total	1085	100%

Interpretation

In this study, data indicate that head and neck injuries are the most fatal followed by injuries in the chest and abdomen regions.

Discussion

The age range of 16 to 35 years was found to have the largest percentage of RTA casualties in the current study (37%). Similar results were also reported from Delhi and Nepal, however, there was less research that looked specifically at the 15–35 and 16–30 age groups, which were shown to be more active in RTA. People in their third decade of life were most frequently involved in RTAs, according to different research from Delhi. According to the current survey, more than 37% of the victims were between the ages of 20 and 49, or between 16 and 35. [16] [17] According to this study, the accident rates were 9:1 greater in men than in women. Delhi had comparable outcomes as well. However, in different research, there was an extremely high male-to-female ratio (9:1). According to reports, males comprised 80% of the victims in RTAs. RTA exposure is substantially higher for men than it is for women. [18] [19] incidents occurred between 4 and 5 PM in the other study's peak period. There were also two periods in Delhi when accidents peaked. These occurred between the hours of 9 and 10 am and 4 and 5 pm. [20] The risk of harm in an RTA seems to be higher for Pillion Riders. Possible causes include erratic driving, excessive speeding, and poorly controlled vehicles with heavy loads. Leg injury (29%) and hand injury (27%) were the most frequent types of RTA injuries that were reported throughout the research period. In Delhi, similar outcomes were also seen. 20% of the cases included falling from a moving vehicle, and 19% involved two cars colliding. These were additional RTA injury-causing mechanisms. [21] [22] One of the biggest issues with alcohol intake is the increase in automobile accidents brought on by drunk driving. High incidences of alcohol-related traffic accidents are reported in both emerging and wealthy nations. [23] [24]

Limitations

The potential limitations of the study were the small sample size and heavily crushed or decomposed bodies which were excluded from the study.

Future Prospective

Additionally, it has been found that fatal RTAs are primarily caused by human mistakes. Even though controlling human errors is a very

challenging task. In this direction, sincere efforts can lower mortality and morbidity. If implemented, the following preventive measures could help reduce fatal RTAs caused by negligence:

- Imposing stricter traffic laws and regulations and punishing offenders severely.
- Strict enforcement of regulations governing the issuance of licenses to drivers and the requirement that a medical examination and fitness certificate be provided as part of the renewal process. Also included on license cards must be informed about the driver's blood type.
- Appropriate road user education, particularly addressing speeding, wearing a helmet, drinking and driving and using the phone while driving, and limitation of the passenger's number in the vehicle.
- Teaching road etiquette to two-wheeler drivers, who are more vulnerable than drivers of other types of vehicles.
- There needs to be increased public knowledge about banning two-wheeler riders from operating motor vehicles if they are not in good physical or mental health.
- helmet use should be a compulsory requirement for drivers and passengers in two-wheeler rides.
- Since fatal head injuries are a leading cause of mortality, it would be useful to inform the general public regarding how RTA cases involving head injuries should be handled.
- In addition to the precautions listed above call for an ambulance, use of a hard cervical collar, early and safe transfer with the help of the ambulance team to the treating hospital, tetanus vaccination, and the administration of antibiotics in a properly calculated dosage will all help to lower infection-related mortality and morbidity.

Conclusion

According to this study, traffic accidents represent a significant burden on our society. According to the current study, human error, a lack of awareness of traffic laws, and a lack of safety precautions are the main causes of road traffic accidents. Therefore, education, knowledge, and adherence to traffic regulations, road improvement, and instruction on safety precautions like wearing helmets or seat belts and no alcohol consumption while traveling may all help in lowering the number of deaths in road traffic accident cases.

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