Section: FMT & T

Research

EXTERNAL INJURIES IN HELMETED AND NON-HELMETED SUFFERERS IN CASE OF ROAD TRAFFIC ACCIDENT: A COMPARATIVE STUDY

Seema Perei[1]

[1]Associate Professor, Department of FM & T, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Odisha, India

Received : 08/09/2022
Received in revised form : 09/10/2022
Accepted : 21/10/2022

Keywords:
Accidents, Helmet and head injuries.

Corresponding Author:
Dr. Seema Perei,
Email:pereiseema@gmail.com
ORCID: 0000-0002-4559-7678

DOI: 10.47009/jamp.2022.4.5.67

Source of Support: Nil,
Conflict of Interest: Nonedeclared

Int J Acad Med Pharm
2022; 4 (5); 340-342

Abstract

Background: Traffic collisions are the number one cause of mortality globally. By 2020, disease is predicted to become the third largest contributor to the global burden of disease. In fatal traffic collisions, motorcycle riders outnumber car occupants by about 25 to 1. Data on crash frequency and kind are required in order to inform safety policies. For the purpose of selecting interventions and determining their efficacy, it is crucial to understand how injuries originate and what kind of damage they are. The current study's goal is to compare two groups of two-wheeler accident victims' damage patterns: those who wore helmets and those who didn't. **Materials and Methods:** This present study was carried out at the Veer Surendra Sai Institute of Medical Sciences and Research, in Burla. Two-wheeler accident victims who were treated in the emergency room were examined. Any person who perishes shortly after a road traffic accident or within 30 days of the collision is regarded as a victim of RTA. Motorbikes, scooters, mopeds, and bicycles were all examples of two-wheelers. **Result:** 120 two-wheeler accident victims' cases were examined. Out of these 120 persons, 66 wore helmets, 30 did not, and the status of the remaining 24 persons, or 24 persons, remained unknown. A grievous injury was experienced by 66.7% of non-helmeted persons and 37.9% of those wearing helmets. Alcohol odour was present in 47.0% of helmeted persons and 26.7% of non-helmeted individuals. Abrasion is the most frequent injury in both helmeted and non-helmeted individuals. Lacerations were present in 28.8% of helmeted people and 86.7% of non-helmeted people. GCS was less than 7 in 19.7% of helmeted people and 46.7% of non-helmeted people. **Conclusion:** Individuals who are not wearing helmets are more likely to get catastrophic injuries. People wearing helmets are more likely to have alcohol odour than those who are not.

INTRODUCTION

Around the world, traffic accidents are a leading cause of fatalities. The global burden of disease is expected to rise to the third highest contributor by 2020, according to projections. About 25 times as many motorcyclists as automobile occupants die in traffic accidents. To inform safety policy, data on crash frequency and type are needed. Knowing how injuries occur and what kind of injury they are is important information for choosing interventions and assessing their efficacy.[1] Injuries to the chest, abdomen, and limbs are more common in helmeted drivers, but according to a recent survey, non-helmeted drivers are more likely to die from head injuries (52.5%) than helmeted drivers (43.8%). Drivers using helmets had a higher prevalence of (Head+Chest+Abdomen) (18.8%) compared to non-helmeted drivers (5%). When compared to those who weren't wearing helmets, spinal injuries were more common.[2] Most RTA victims die as a result of head injuries. More than 90% of deaths, according to the World Health Organization, take place in low- and middle-income nations. Road traffic accident injuries will move up to the sixth spot as a leading cause of death globally by 2020. The most frequent cause of fatality and morbidity after two-wheeler crashes is head injury. Although it is a legal obligation for two-wheeler riders to wear a helmet, this rule has not been strictly enforced in the majority of the country. Evidence from today's global studies suggests that it does lower the death rate.[3] It also depends on how consistently those working in forensic medicine wear helmets, as well as on whether or not they're wearing good helmets and doing so correctly. The anticipated effects might not be attained if that is not guaranteed. The purpose of the current study is to examine the injury patterns

ISSN (O): 2687-5365; ISSN (P): 2753-6556

in two-wheeler accident victims who were wearing helmets and those who weren't.

MATERIALS AND METHODS

With the generous approval of the ethical committee, the study was carried out at the Veer Surendra Sai Institute of Medical Sciences and Research, in Burla. Two-wheeler accident victims who were treated in the emergency room were examined. Any person who perishes shortly after a road traffic accident or within 30 days of the collision is regarded as a victim of RTA.[1] Motorbikes, scooters, mopeds, and bicycles were all examples of two-wheelers. Any sort of mishap, including collisions with other objects, surfaces, or living things as well as falls from moving vehicles, was taken into account in the study. Details, such as laboratory investigation reports, are gathered from the case sheet in hospitalised cases. Injuries and general examination findings are recorded and photographed. The casualty medical officer provided consent for the study, and the victim's relatives provided written approval. One hundred twenty people participated in the study, which was done over the course of one and a half years. The following data were gathered from the study:

1. Type of Injuries (Grievous or Non-grievous).
2. Alcohol smell present or absent.
3. Number of Abrasions, bruises and lacerations.
4. Glasgow Coma Scale.

Data was gathered and tallied. The statistical software SPSS 20.0 was used for the statistical analysis. For qualitative data, the chi-square test was utilised, and the t test was used for quantitative data. Statistical significance is defined as a "p" value of 0.05 or lower.

RESULTS

120 two-wheeler accident victims' cases were examined. Out of these 120 persons, 66 wore helmets, 30 did not, and the status of the remaining 24 persons, or 24 persons, remained unknown. A grievous injury was experienced by 66.7% of non-helmeted persons and 37.9% of those wearing helmets [Table &Figure 1]. Alcohol odour was present in 47.0% of helmeted persons and 26.7% of non-helmeted individuals [Table &Figure 2].

Table 1: Type of Injuries.

Variables	Helmeted Individuals (n=66)	Non Helmeted Individuals (n=30)	Unknown Cases (n=24)
Grievous Injury	25 (37.9%)	20 (66.7%)	10 (41.7%)
Non-Grievous Injury	41(62.1%)	10 (33.3%)	14 (58.3%)

Table 2: Presence/Absence of Alcoholic Smell.

Smell of Alcohol	Helmeted Individuals (n=66)	Non Helmeted Individuals (n=30)	Unknown Cases (n=24)
Present	31 (47.0%)	08 (26.7%)	09 (37.5%)
Absent	35 (53.0%)	25 (73.3%)	25 (62.5%)

Table 3: Number of Abrasions, bruises and lacerations

Nature of Injuries	Helmeted Individuals (n=66)	Non Helmeted Individuals (n=30)	Unknown Cases (n=24)
Abrasions	65 (98.5%)	28 (93.3%)	23 (95.8%)
Bruises	45 (68.2%)	19 (63.3%)	13 (54.2%)
Lacerations	15 (28.8%)	26 (86.7%)	20 (83.3%)

Table 4: Glasgow Coma Scale Score.

Glasgow Coma Scale Score	Helmeted Individuals (n=66)	Non Helmeted Individuals (n=30)	Unknown Cases (n=24)
3-7	13 (19.7%)	14 (46.7%)	13 (54.2%)
8-15	53 (80.3%)	16 (53.3%)	11 (45.8%)

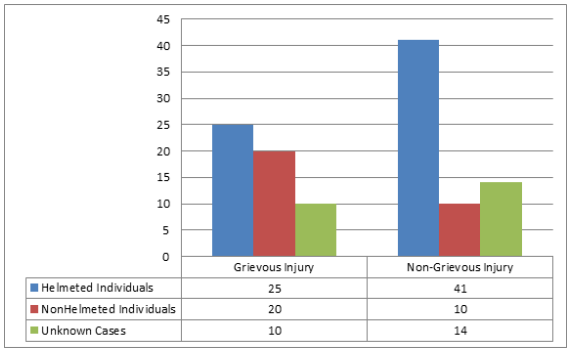

Figure 1: Type of Injuries

Abrasion is the most frequent injury in both helmeted and non-helmeted individuals. Lacerations were present in 28.8% of helmeted people and 86.7% of non-helmeted people [Table &Figure 3]. GCS was less than 7 in 19.7% of helmeted people and 46.7% of non-helmeted people [Table &Figure 1].

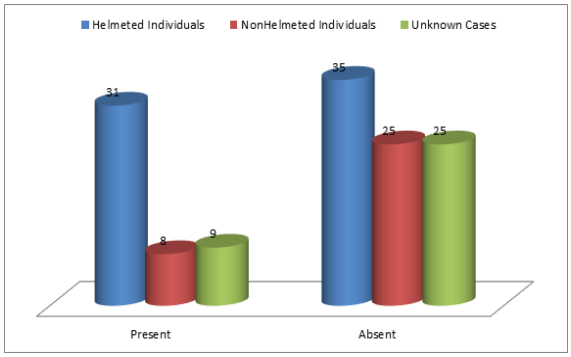

Figure 2: Presence/Absence of Alcoholic Smell

ISSN (O): 2687-5365; ISSN (P): 2753-6556

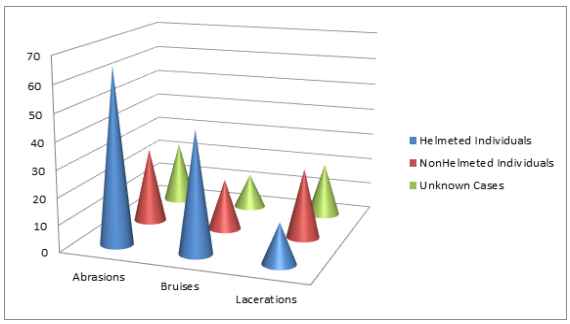

Figure 3: Number of Abrasions, bruises and lacerations

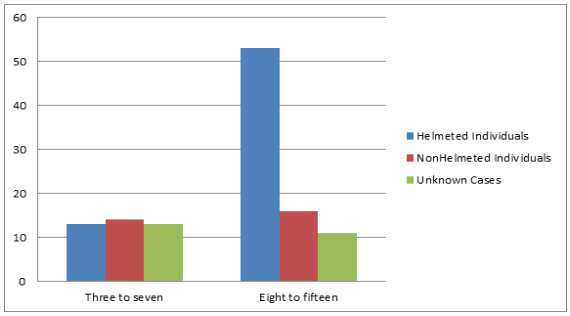

Figure 4: Glasgow Coma Scale Score

DISCUSSION

Riders of two-wheelers sustain a major part of the severe injuries sustained in traffic accidents. In the current study, the pattern of brain damage in two-wheeler accident fatalities is observed and analysed in relation to helmet wear. The majority of the involved vehicles (64%) were motorcycles. The victim was between the ages of 20 and 30. Among those who were wearing helmets, 80.5% had head injuries, compared to 98.8% of those who weren't. In helmeted patients, abrasion was the most prevalent injury, followed by contusion, while laceration was more common in non-helmeted victims. Gupta S et al. found findings that were similar to these.[4] When compared to the non-helmeted group, they discovered that the presence of scalp contusions and lacerations was marginally lower in the helmeted sufferers. Helmets protect against head injuries. According to Forensic Medicine, non-helmeted riders experienced 29.52% more facial lacerations than helmeted victims (16.8%). The group wearing helmets also has higher facial bone fractures. The use of a helmet does not appear to have provided any extra protection from facial bone injuries. Motorcycle riders who were not wearing helmets were three times more likely to get facial fractures than those who did. In contrast to prior studies,[5] the frequency of fissure fracture of the skull vault was higher in helmet-wearing riders (41.2%) than in non-helmeted (34.47).[6,7] More non-helmeted athletes (38.4%) than helmeted athletes (33.7%) sustained base of the skull fractures.[8,9] Focal brain injuries were more common in the group without helmets. So it should go without saying that helmets protect against traumatic brain injury. While thoracic and lumbar spine injuries were more common in the helmeted group, there is no discernible difference in the prevalence of cervical spinal injuries. In 54.2% of non-helmeted instances, the cause of death was a head injury, whereas in helmeted cases, it was only 44.1%, demonstrating the protection provided by a helmet in TBI.[10] To inform safety policy, one needs information on the frequency and types of traffic accidents as well as a thorough understanding of the factors that contribute to accidents. Understanding how injuries are caused and what kind they are will be a useful tool for choosing interventions and assessing their efficacy.[11] This study examined the injury patterns in both helmeted and non-helmeted two-wheeler accident patients.

CONCLUSION

In conclusion, non-helmeted individuals have a higher rate of severe damage than helmed individuals. Alcohol smell has been detected more frequently in people wearing helmets than in those who aren't. Abrasion has been discovered to be the most typical injury in helmeted individuals. More lacerations have been observed in non-helmeted people. In contrast to those wearing helmets, more non-helmeted people were found to have a GCS of less than seven.

REFERENCES

1. Goyal M. The correlation of CT scan and operative findings in cases of head trauma. J Indian Acad Forensic Med. 2003; 25(4): 125-132.
2. Gosh P K. Epidemiological study of victims of vehicular accidents in Delhi. J Indian MedAssoc. 1992 ;90:309-12.
3. Singh H. Pattern and distribution of injuries in fatal Road Traffic Accidents in Rohtak. J Indian Acad Forensic Med. 2004; 26(1): 20-23.
4. Srivastav AK, Gupta RK. A study of fatal road accidents in Kanpur. J Indian Acad Forensic Med. 1989;11(1): 23-27.
5. Biswas G. Pattern of Road Traffic Accidents in North-East Delhi. J Forensic Med Toxicol. 2003; 20(1): 27-32.
6. Kiran ER. Road safety at cross roads. J Indian Acad Forensic Med. 2004; 26(4): 147- 152.
7. KocharA. Road Traffic Accidents & Alcohol. Int J Med Toxicol Leg Med.. 2002;5(1):22-24.
8. Singh YN, Bairagi KK, Das KC. An epidemiological study of road traffic accident victims in medicolegal autopsies. J Indian Acad Forensic Med. 2005;27(3):166-169.
9. Reddy KSN. The Essentials of Forensic Medicine and Toxicology, 27thEdition, Hyderabad, K.Saguna Devi ;2008. pp.213- 233.
10. Knight B. Forensic Pathology, 2nd Edition, London, Arnold; 1996. pp.179-195.
11. Nath N C. Road Traffic Accident -The Present Scenario and How to prevent it. J Indian Med Assoc. 2004;102(04):190.

ISSN (O): 2687-5365; ISSN (P): 2753-6556