

The Associated Factors in the Prevalence of Motorcycle Accidents

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ABSTRACT

Objective: The purpose of this study was to examine the types of fractures sustained and damage patterns among bike trauma patients who were sent to the emergency department.

Study design: Retrospective study

Place and duration of study: Department of Orthopedic, Khyber Teaching Hospital Peshawar, From September, 2021 to February, 2022.

Methods: In this study, 170 patients of motorcycle accidents were taken to investigate the factors associated with the accidents. The collected data included the demographic variables, fractures experienced, patterns of injury, time of accident, types of accident and the possible causes of accidents. Detailed demographics of enrolled cases included age, sex, BMI and localities were recorded after taking informed written consent. Data analysis was performed in SPSS-21.0.

Results : A total of 170 patients of motorcycle accidents were conducted to study in which 119 (70%) were males and the rest 51 (30%) were females. The mean age of the patients was 29.6 years. The most common type of accident was car-bike collision that of 65.1%. Most of the deaths were occurred due to the head injury that accounted for 51.1%. The significant association of age, sex, ignorance of safety measures and types of roads with motorcycle accidents was shown in the multiple logistic regression analysis.

Conclusion: Motorcycle accidents caused severe life threatening injuries to the patients. Rate of mortality was high among the patients with head injury. Males were more affected by the accidents as they were more in numbers. Accidents were more occurred in the population with age category of 18-27 years. Therefore, significant safety measures can reduce the risks of motorcycle accidents.

Keywords: multiple injuries, motorcycle accidents, mortality.

INTRODUCTION

Deaths, hospitalizations, inabilities, and socioeconomic disadvantages were all significantly higher among those with road traffic injuries. About 1.24 million people lose their lives on the world's roadways every year. Additionally, road traffic accidents cause an estimated 20-50 million injuries each year. [1]

Statistically, motorcyclists suffer the most fatal injuries in traffic collisions. These vehicles are becoming increasingly popular among young people despite the risks they pose [2,3]. Nearly one-third of Iran's registered cars are motorcycles [4]. There is a 30 times and 9.3 times greater risk of fatality for motorcyclists compared to other drivers on the road, respectively [5,6].

In India and other parts of Asia, motorbikes are a popular and ubiquitous method of transportation, and they are often used to fulfil the requirements of required business travel. However, some motorcycle excursions are made for commercial (milk/newspaper/food/courier) as well as recreational, social, and other purposes. Vlahogianni et al. found that when comparing motorcycles with cars, motorcycles are one of the more cost-effective ways of transportation across the board (2012) [7]

Patients who seek care at the ED after being involved in a traffic accident on a motorcycle or bicycle often suffer from serious injuries that necessitate hospitalisation. Injuries sustained by riders of two-wheeled vehicles have been the subject of previous research [8-10]. Younger and more inexperienced riders will find bicycles and motorbikes simpler to operate than other modes of transportation. Licenses to operate automobiles in South Korea can be obtained at the age of 18, while motorbike licences can be obtained at the age of 16. Moreover, road traffic injuries, such as those sustained in motorcycle and bicycle accidents, are continuously one of the top three leading causes of death amongst young people [11], as reported by the World Health Organization. Traffic accidents are the third highest cause of death for children under the age of 10 in South Korea [12], and the second largest cause of death overall. For purposes of accident investigation, management, and prevention, a thorough description of demographic factors and incident data is crucial. Therefore, the

purpose of this research was to assess the incidence of motorcycle crashes and the factors related to them among patients who had been involved in such incidents.

MATERIALS AND METHODS

This retrospective study was conducted as Department of Orthopedic, Khyber Teaching Hospital Peshawar, From September, 2021 to February, 2022 and comprised of 170 patients. Detailed demographics of enrolled cases included age, sex, BMI and place of livings were recorded after taking informed written consent. Patients <15 years of age, pregnant females, patients had cardiac failures and those did not provide any written consent were excluded in this study.

Included patients were aged between 15 to 58years. Among all cases mechanism of trauma including the features of injury as fractures, hematomas, internal bleed. An injury severity-score was adapted for this purpose. Before doing any analysis in SPSS-21, we double-checked and triple-checked all of the data we received for any conceivable flaws, fixed any problems we found, then ran the data through the programme.

Information such as ages, sexes, timestamps, injuries sustained, locations, fatality rates, and vehicle makes and models were recorded. Both the mean and the standard deviation were provided for the quantitative variables. In addition, numerical and ratio representations of the qualitative data were provided. Using the t-test, we looked at how different ages related to the outcome of interest. If the p-value was less than 0.05, it was regarded to be significant.

RESULTS

Among 170 patients of motorcycle accidents, there were 119(70%) males and 51(30%) females. The mean age of the patients was (). The majority of the patients were fall under the age category of 18-47 that accounts for 76.3%. Patients from urban areas were 120 (71%) and from rural areas there were 50 (29%).

Table 1: demographic characteristics of patients

Variables		Frequency	Percentage
Age	15-17	22	12.9
	18-27	79	46.4
	28-37	36	21.1
	38-47	15	8.8
	48-57	8	4.7
	<58	10	5.8
Gender	Male	119	70
	Female	51	30
Place of residence	Urban	120	71
	Rural	50	29

Among all cases, 15 patients used the safety measures such as wearing helmet that accounted for (8.8%) while 155 patients that accounted for (91.2%) did not use helmet while riding.(Fig 1)

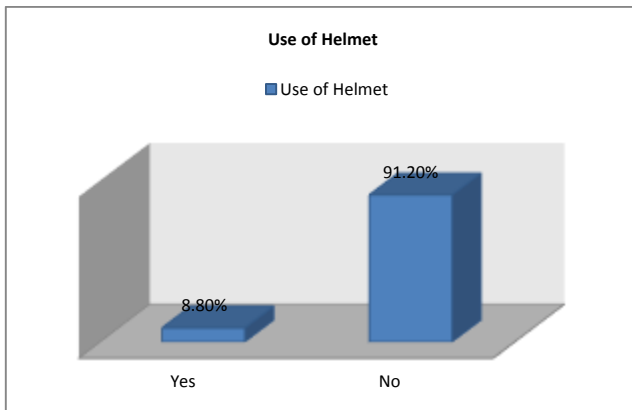


Fig 1: Use of helmet among all cases

In order to find the possible types of motorcycle accidents, the most common type of accident was car-bike collision that of 65.1%. The collision of bike-truck was of 14.1%. The bike-bike collision was of 11.3% and bike-pedestrian was 9.5% respectively. (Fig 2)

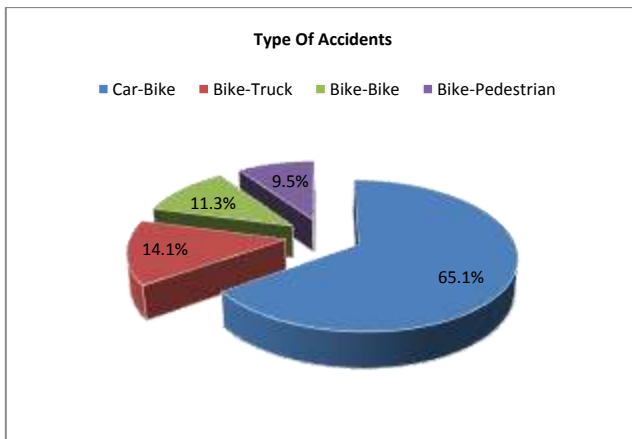


Fig 2: Type of accidents

In order to find the possible factors associated with the cause of motorcycle accidents were different. Among them the high speed was the major cause of road accidents as it was accounted for 57%. 42 people made 24.7% due to smoking while driving. People who were wheeling-racing were 15 (8.8%). Drunk drivers were 12(7.1%) and others were 4(2.4%) respectively. Timings of accidents were also notable in making cause of accidents as in the evening the occurrence of accidents was more high 119(70%). Afternoon 19 (11.2%) and in morning 32(18.8%) respectively. (Table2)

Table 2: factors associated with the cause of accidents

Variables	Frequency	Percentage	
Causes	High speed	97	57
	Smoking	42	24.7
	Racing-wheeling	15	8.8
	Drunk driving	12	7.1
	Cloth in wheel	4	2.4
	Timings	Morning	32
Afternoon		19	11.2
Evening		119	70

In order to view the patterns of injury in the motorcycle accidents patients, head was the most injured part of the body as it accounted for 51.1%. 84.5% of total death cases had trauma to head. The upper and lower limb extremities were 12.3% and 29.6% respectively. Chest, abdomen and other parts contributed 3.6%, 2.3% and 1.1%. (Fig 3)

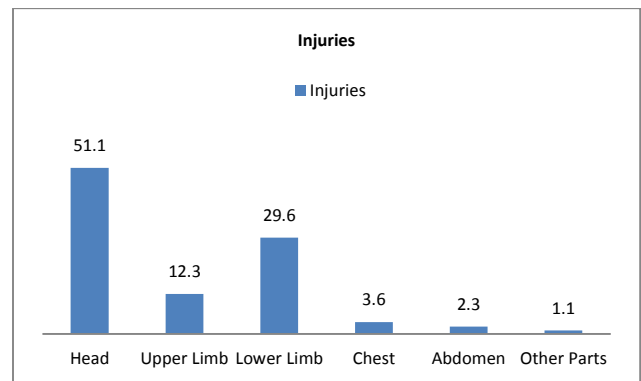


Fig 3: Type of Injuries among all cases

DISCUSSION

When it comes to traffic accident victims, bikers are some of the most helpless of the bunch. There has been a rise in the number of incidents involving young people driving these types of vehicles because of the inherent dangers of these vehicles and their increasing popularity. The average age of the trauma patients in this research was 29.6 years old, with 80.4% of them being between the ages of 15 and 34. Statistics also reveal that younger people are more likely to be involved in motorbike accidents. According to reports, the median age ranges from 22 to 31. [2,15,16].

Motorcycle riders are some of the most susceptible individuals to becoming victims of traffic accidents. Because of the inherently dangerous nature of this form of vehicle and the rising number of young people who use it, there has been a rise in the amount of car accidents in which these types of road users were involved [13]. According to the findings of this study, the age range of 15-34 years old represented 80.4% of a trauma patients, with a mean age of 29.6 years. Comparable studies have also revealed that persons in younger age groups are more likely to be involved in motorbike accidents. According to recent reports, the median age is anywhere from 22 to 31 years old.

In the research that was carried out, it was shown that males had a larger chance of damage than females do. Of the total participants, there were 119 males, which means that 70% of them were male. In Iran, females accounted for just 6% of injury-related mortality cases, which indicates that men had a significantly greater frequency of fatal trauma [2,14,18].

The current analysis found that motorcycle accidents were responsible for 51.1% of head injuries, which in turn caused 84.5% of overall deaths. 29.6% of the lower extremities and 12.3% of the upper extremity were affected. This was different from the research that was done in northeast Brazil Campina Grande, in which lower extremities were the largest damaged area of the body (55.2%).

[17] This discrepancy could be attributed to variations in driving safety usages such as helmets. According to the findings of this research, there was a substantial association between motorcycle accidents and factors such as age, gender, high speed, and the kind of collision.

CONCLUSION

Patients sustained severe injuries that put their lives in danger as a result of motorcycle accidents. Patients who had head injuries had a significantly increased risk of passing away. Due to the greater proportion of males, more people were adversely impacted by the accidents. Accidents were more prevalent in the group that was between the ages of 18 and 27 years old. Therefore, taking great precautions to protect oneself can significantly lower one's chance of being involved in a motorbike accident.

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