

# Patterns of Injuries in Pillion Riders, Associated with Gender in Karachi, Pakistan

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## ABSTRACT

**Objective:** To analyze the injury pattern among pillion riders

**Study Design:** Retrospective study

**Place and Duration of Study:** This study was conducted at the Trauma Centers of Civil Hospital, Jinnah Hospital and Abbasi Shaheed Hospital, Karachi from January, 2017 to December, 2021.

**Materials and Methods:** Eight thousand, five hundred and thirty victims injured in two wheeler accidents and injuries occurred to pillion riders were compiled from the three major medico legal centers of Karachi.

**Results:** The highest number of accidents observed between the age group of 20 to 29 years. Male 62.13% were found more susceptible as compare to females. Frequent fractures were seen in lower limb region. 2018 was the year with 21.91% highest autopsies rate. Least number of autopsies were 16.6% in 2020. We observed laceration was the major type of injury seen in maxillofacial/skull region and abrasions were most frequent in lower limb region followed by fracture.

**Conclusion:** Effective preventive measures needed to be made at both government and individual level to decrease the road accidents in Karachi, Pakistan.

**Key Words:** Pillion riders, Long clothing, Dupatta, Injuries, two wheeler accidents

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## INTRODUCTION

The burden of injuries raised globally becomes the fourth leading cause of mortality and disability worldwide by 2030. More than million bear injuries, massive young potential is being destroyed, which is not ignorable.<sup>1</sup> Around 90% deaths occur in low middle income countries relate to trauma.<sup>2</sup>

The economic damage associated with road accidents equals their gross domestic products. In some nations,

the number of people experiencing motorcycle-related injuries is sharply rising.<sup>3</sup>

Increased incidence of RTA are caused by a variety of factors, such as poor roads, unpredictable traffic, and the widespread use of motorbikes as a form of transportation due to the high cost of fuel and low cost of motorcycles in comparison to other modes of transportation.<sup>4</sup> Motorcyclists are 35 times more likely than occupants to die from a crash than a passenger car in a crash and eight times more likely to be injured.<sup>5</sup> Therefore, injuries due to motorcycle accidents may have a significant impact on population health and healthcare facilities.<sup>6</sup>

This research was carried to analyze pattern severity of injuries especially the pillion riders get involved in accidents and earliest possible associated feature due to lack of protection. The way that female pillion riders sit causes them to either come into direct contact with the object that is being struck or have their clothing become caught in the motorbike's chain.<sup>7</sup> Long scarf/dupatta has a particularly high incidence of getting trapped in the spokes of the wheel or the driving chain of the bikes, which can lead to serious accidents and life threatening injuries, especially to the female passenger.<sup>8</sup> In case of children their feet's are in hanging position get entangled with the spoke of the wheel of motorcycle.<sup>9</sup>

Abrasions, lacerations, and fractures were the predominant types of injuries reported in numerous

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articles on motorcycle accidents.<sup>10</sup> we conducted this study to see the pattern of injuries in pillion riders.

## MATERIALS AND METHODS

In this retrospective study data were collected from the three biggest emergency departments of the city which receive almost all the major emergencies of the city. There were three government run hospitals, Abbasi Shaheed Hospital, Trauma center CHK, and Trauma ward JPMC. Data was obtained after seeking permission of Police surgeon Karachi. Five year data was evaluated retrospectively from 1<sup>st</sup> January 2017 to 31<sup>st</sup> December 2021. The admissions registers of the departments were used to get the registration numbers of the patients. These were then used to retrieve patients' case notes. The information retrieved from the case notes included patients 'demographics, injuries sustained, date of the injuries, cause of the injuries, types of collision and whether death occurred. Ethical approval was obtained from the custodian of data, police surgeon Karachi assuring with privacy and confidentiality. The data were then entered into SPSS-21 for analysis.

## RESULTS

The majority of the pillion riders involved in two-wheeler accidents belong to the age group of 20-29 years, 3530 (41.38%) followed by individuals in age group 30-39 years 2210(25.19%) and 989 (11.59%) of age group 50-59years. Males were found more susceptible as compared to females with 5300 (62.13%). (Table 1)

Among victims of accidents, maxillofacial/skull region received most frequent injuries (2015) with 130 (6.45%) fractures observed in this region. Majority fractures 330(17.71%) were seen in lower limb region while minimum injuries (570) were observed in pelvic region with 170(29.82%) fractures whereas minimum number of fractures (63) seen in spine region (Table 2).

The frequency of autopsies conducted on two-wheeler accident victims (pillion) who died on the road throughout a five-year period between 2017 and 2021

(Table 3). The majority of autopsy, 557 (21.91%), were performed in 2018, while the fewest number, 424 (16.68%), were carried out in 2020.

**Table No.1: Characteristic of the pillion riders (n=8530)**

Characteristics	No.	%
<b>Age (years)</b>		
10-19	880	10.32
20-29	3530	41.38
30-39	2210	25.91
40-49	621	7.28
50-59	989	11.59
60-69	151	1.77
70-79	149	1.75
<b>Gender</b>		
Male	5300	62.13
Female	3230	47.81

**Table No.2: Anatomical site of injury and number of fracture**

Region	Fracture	% of fracture	Total injuries
Maxillofacial /skull	130	6.45	2015
Lower limb	330	17.71	1863
Neck/cervical	132	8.10	1630
Upper limb	250	23.81	1050
Ribs	141	17.41	810
Spine	63	10.64	592
Pelvis	170	29.82	570

**Table No.3: Autopsy examination of two wheelers pillion riders**

Year of autopsies	No.	%
2017	552	21.72
2018	557	21.91
2019	498	19.59
2020	424	16.68
2021	511	20.10

**Table No.4: Pattern of injury to the pillion riders**

Region of injuries	Bruises		Abrasions		Lacerated wounds		Crush injuries		Total Injuries
	No.	%	No.	%	No.	%	No.	%	
Maxillofacial /skull	507	25.16	574	28.49	702	34.84	102	5.06	2015
Lower limbs	442	23.73	536	28.77	502	26.95	53	2.84	1863
Upper limbs	248	23.62	233	22.19	272	25.90	47	4.48	1050
Pelvis	130	22.81	98	17.19	100	17.54	72	12.63	570
Spine	186	31.42	192	32.43	128	21.62	23	3.89	592
Ribs	193	23.83	202	24.94	230	28.40	44	5.43	810
Neck/cervical	138	8.47	403	24.72	902	55.34	55	3.37	1630

The pattern of injuries involving different regions of body observed among victims (pillion) of two-wheelers accidents depict that most frequent injuries were observed in maxillofacial/skull region (2015), with laceration as the most common type of injury (702). Abrasions were the most frequent type of injury seen in lower limb region (502) and in spinal region (192), while (1050) injuries were found in upper limb, where laceration is most frequent pattern of injury seen in 272 victims.

## DISCUSSION

Motor cycle accidents are renowned, common society health problems, in all under develop countries. Fatality rates among the people involved in road accidents show an alarming increase.<sup>11</sup> In our study we revealed that probability of severe injury increase for motor bike accidents, affecting young and middle aged pillion riders (20-39 years). More than half of the pillion riders involved in accidents were male, another study conducted in Pakistan contradict these findings where females reported to have increased like hood of injuries.<sup>12</sup> There is no speed limit for the local roads and similarly for the number of pillion riders.

The most common injury sites were the lower limb, upper limb and skull. Similar findings were reported by another study where anatomical bodily parts that are most affected are the head and limb. Death typically results from head involvement and affects riders more than pillion passengers.<sup>14</sup> Bone fractures were the common injury pattern in lower limb followed by upper limb and head injuries, similarly Fitzharris et al. reported that pillions were more likely than riders to suffer lower extremities crush injuries.<sup>15</sup> In our findings we observed that children are the victim of motor cycle accidents as pillion passengers, another study reported that children are often spotted at front and back of a rider as pillion passenger who are more susceptible to injuries.<sup>16,17</sup> In our study lacerations were the most common type of injury seen in maxillofacial/skull region and abrasions were most frequent in lower limb region followed by fracture, these findings correlate with the results of other studies.<sup>18,19</sup> This study reported that in majority of autopsies, traumatic head injuries together with other injuries were determined to be the cause of death although motorcycle accidents cannot always be averted, female faces more difficulties as pillion with their seating style taboo, like she must balance herself on one side saddle position and cross her fingers that she won't fall off,<sup>20,21</sup> clothing, helmets, and safety that concern female passengers.<sup>22,23</sup> Protective gear like motorcycle safety helmets can help to prevent or lessen head injuries and their severity. Both riders and pillion must wear safety helmets. Study conducted in Karachi revealed, helmets are regarded as the primary method of preventing head injuries, lowering the risk of mortality by 42% and the risk of head injuries by 69%.

9 for both rider as well as pillion.<sup>24</sup> Similar association observed in other studies as well.<sup>25,26</sup> The motor vehicle act which makes helmet use mandatory for both rider and pillion riders.<sup>24</sup> Despite the fact that the majority of Pakistani women do not personally wear helmets when driving or riding a motorcycle, however, the majority agree that drivers and riders of motorcycles should be obliged by law to wear helmets.<sup>27</sup>

## CONCLUSION

In Karachi, the growing number of motorcycles raises safety concern. Due to the rising number of injuries caused by two wheeler accidents, with increased involvement of pillion riders, it is crucial to change the public's perspective on safety. The most likely way to modify the attitude of riders in Pakistan is through television media campaigns for safety measures and injury prevention. However, programs for rider education and injury prevention should be made available to potential pillions as well. There should be early education on the importance of helmets in traffic incidents in conjunction with government laws and enforcement.

### Author's Contribution:

Concept & Design of Study: Farzana Azam Khan  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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