

Deaths in two wheelers due to road traffic accidents - An autopsy study

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Abstract

Two wheeler accidents are a common cause of death, disability and demand for emergency medical care. Mortality due to two wheeler accidents were increasing throughout the world. Our study was conducted to know the patterns of injuries in fatal accidents involving riders and pillion riders of two wheelers. It includes 179 victims who died due to two wheeler accidents in Road Traffic Accidents, and were autopsied at RIMS, Kadapa, in a period of 2 years from 1st January 2012 to 31st December 2013. There was a marked male preponderance (84.35 %) compared to females (15.64%), riders were the majority of the victims when compared to (73.74%) pillion riders (26.25%) and most vulnerable age group for both riders and pillion riders were in third and fourth decade involving (68.17%) and (72.33%) respectively. Head involvement was noted in majority of the riders and pillion riders.

Key Words: Riders, Pillion Riders, Helmet, Surveillance, Two wheeler, Road Traffic Accident.

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Received Date: 24/06/2017 Revised Date: 10/07/2017 Accepted Date: 21/08/2017

DOI: <https://doi.org/10.26611/1018322>

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 24 August 2017

particular is high compared to the high income countries¹. Currently motor vehicle accidents rank ninth in order of disease burden³ Gradual increase in number of motor vehicles, growth of population and poor access to health care are some of the important factors in the fatalities due to vehicular accidents. Two wheelers are at severe risk of injury when compared with auto mobile occupant as his total body exposed to injury. Government should implement strict traffic rules and steps should be taken on Special education programmes on driving for two wheelers.

INTRODUCTION

The process of rapid and unplanned urbanization has resulted in an unprecedent revolution in growth of motor vehicles throughout the world. Every day as many as 140,000 people are injured on the world's roads; more than 3000 die and some 15,000 are disabled for life¹. Intra-country or regional differences in patterns of injury by the road user type have significant implications for prevention policies². The fatality and injuries in developing countries and South East Asian countries in

MATERIALS AND METHODS

It includes 179 victims who died due to two wheeler accidents in Road Traffic Accidents, and were autopsied at RIMS, Kadapa, in a period of 2 years from 1st January 2012 to 31st December 2013. Information of age, gender, socio-economic condition, nature of injuries were collected from the panchanama, autopsy findings, circumstantial evidence, reliable history provided by the accompanying relatives.

RESULTS

Incidence of fatal accidents observed more in Males (84.35%) compared to females (15.64%), with Male to Female ratio of 5.39:1. Same observations were noted in riders and pillion riders Riders were the majority of the victims when compared to (73.74%) pillion riders (26.25%) (Table 1). In both riders and pillion riders victims were more in third decade and fourth decade involving (68.17%) and (72.33%) respectively. As these age group involved more activities, they are the most common victims of two wheeler accidents (Table 2). Majority of fatal two wheeler incidences taking place in day time compared to night time (Table: 3).

Table 1: Male and Female ratio in Riders and Pillion Riders

	Male	Female	Total
Riders	127(96.21%)	005(03.78%)	132(100%)
Pillion Rider	024(51.06%)	023(48.93%)	047(100%)
Total	151(84.35%)	028(15.64%)	179(100%)

Table 2: According to the Age Group

Age	Riders	Pillion Rider
1-10	00.00%	00.00%
11-20	09(06.81%)	00.00%
21-30	59(44.69%)	19(40.42%)
31-40	31(23.48%)	15(31.91%)
41-50	22(16.66%)	04(08.51%)
51-60	04(03.03%)	06(12.76%)
>60	07(05.03%)	03(06.38%)
Total	132(100%)	47(100%)

Table 3: Time of Accident

Time Interval	Riders (%)	Pillion Riders (%)
0 Hrs - 6 Hrs	21(15.90%)	08(17.02%)
6 Hr - 12 Hrs	38(28.78%)	12(25.53%)
12 Hrs - 18 Hrs	47(35.60%)	17(36.17%)
18 Hrs -24 Hrs	26(19.69%)	10(21.27%)
Total	132(100%)	47(100%)

Table 4: Place of Accident in percentages

Place	Rural	Urban
Riders	39%	61%
Pillion Riders	44%	56%

Most of the fatal accidents taking place in urban area only, compared to rural area (Table 4). Even though helmets were used, 24% of the riders succumbed to death indicates that helmet can protect up to an extent only. In this type of incidents mortality depends mainly on the speed of the motor vehicle at the time of accident (Table 5)

Table 5: Helmets used in percentages

	Used	Not used
Riders	24%	76%
Pillion Riders	00%	100%

Table 6: Licence holders in Riders

	Number	Percentage%
Licence present	49	37.12%
Licence absent	83	62.87%
Total	132	100%

Majority of the riders (62.87%) were not holding Motor Driving License. It reflects the inefficiency of surveillance by the government authorities. (Table 6) Head involved in most cases of riders (61%), followed by abdomen (42%) chest (28%) and lower limbs (21%). In pillion riders head (46%) and face (38%) involved in majority of the cases followed by abdomen (36%) and lower limbs (28%) (Table 7).

Table 7: Associated body area involved in injuries in percentages

Part of the body	Riders	Pillion Riders
head	61%	46%
face	14%	38%
Neck	08%	17%
Chest	28%	26%
Abdomen	42%	36%
Upper limbs	12%	19%
Lower limbs	21%	28%

Table 8: Fractures of bone Involving Riders and Pillion Riders in percentages

Bone	Riders	Pillion Riders
Skull bones	54%	69%
Neck bones	14%	30%
Thorasic bones	09%	22%
Pelvic bones	08%	18%
Bones of upper limbs	15%	38%
Bones of lower limbs	26%	24%

Table 9: Associated organs involved in percentages

Organ	Riders	Pillion Riders
Liver	30%	14%
Lung	27%	11%
Heart	12%	09%
Kidney and spleen	21%	09%
Intestines	011%	16%
Brain	39%	58%
Upper and lower limbs	26%	32%

Fracture of the skull (54%) involved in majority of the riders followed by bones of lower limbs (26%) and upper limbs (15%). In pillion riders fracture of the skull involved in majority of the cases (69%) followed by bones of upper limbs (38%) and lower limbs (24%) (Table: 8). In both riders and pillion riders most commonly involved organ was brain followed by limbs. In riders liver (30%), lungs (27%) and limbs have majority of the injuries. But in pillion riders limbs got major injuries after brain (Table: 9).

DISCUSSION

Incidence of fatal accidents in two wheelers observed more in Males (84.35%) compared to females (15.64%), with Male to Female ratio of **5.39:1**. Same observations were noted in riders and pillion riders. This is consistent with findings by Rakhi *et al*⁴ Bairagi *et al*⁵, Ravi kumar *et al*⁶ Moskal *et al*⁷ B. K. Mishra *et al*⁸ B. R.Sharma *et al*⁹. In both riders and pillion riders victims were more in third decade and fourth decade involving (68.17%) and (72.33%) respectively similar observations noted by Bairagi *et al*⁵, Ravi kumar *et al*⁶ Moskal *et al*⁷. Majority of fatal two wheeler incidences taking place in day time compared to night time. This is in contrast with study by Bairagi *et al*⁵, Ravi kumar *et al*⁶ B. K. Mishra *et al*⁸. Most of the fatal accidents taking place in urban area only, compared to rural area consistent with Bairagi *et al*⁵, Ravi kumar *et al*⁶. Even though helmets were used, 24% of the riders succumbed to death indicates that helmet can protect up to an extent only. In this type of incidents mortality depends mainly on the speed of the motor vehicle at the time of accident similar with Ravi kumar *et al*⁶ Moskal *et al*⁷. Majority of the riders (62.87%) were not holding Motor Driving License. It reflects the inefficiency of surveillance by the government authorities. similar with study by Moskal *et al*⁷ B. R.Sharma *et al*⁹. Head involved in most cases of riders 61%, followed by abdomen (42%) chest (28%) and lower limbs (21%) consistent with study by Bairagi *et al*⁵. In pillion riders head (46%) and face (38%) involved in majority of the cases followed by abdomen (36%) and lower limbs (28%). Fracture of the skull (54%) involved in majority of the riders followed by bones of lower limbs (26%) and upper limbs (14%) consistent with Bairagi *et al*⁵, Ravi kumar *et al*⁶. In pillion riders fracture of the skull involved in majority of the cases (69%) followed by bones of upper limbs (38%) and lower limbs (24%). In both riders and pillion riders most commonly involved organ was brain followed by limbs, similar to study by Bairagi *et al*⁵ Ravi kumar *et al*⁶ B. R.Sharma *et al*⁹. In riders liver (30%), lungs (27%) and limbs have majority of the injuries. But in pillion riders limbs got major injuries after brain. 45% of victims died at the spot. This finding is contrary with study by B.R.Sharma *et al*⁹. In India two wheelers are one of the important means of transport. Major determinants of the fatality are the riders crash speed. Incorrect use of motor cycle brakes also considered to be a factor in many accidents. Concerted action based on reliable data and road safety research can lead to reduction in mortality rates due to road traffic

accidents¹⁰. A critical first step towards improving road safety is the availability of reliable, accurate and adequate data on road crashes and the resulting fatalities and injuries¹¹.

CONCLUSION

Special education on driving should be implemented as it makes a great impact on the incidence of accidents and all drivers should be encouraged to undertake them. Developments in safe breaking system, well maintained roads with good lighting system at night time, strict maintenance of traffic rules requiring riders and pillion riders of two wheelers to wear helmets and strengthening the health facilities for the victims will decrease the severity of this endemic problem.

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Source of Support: None Declared
Conflict of Interest: None Declared