Study of Pedestrian Injuries and Fatalities in Maharashtra Population

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Abstract

Background- Pedestrians are the common road users India, with increasing traffic on road has lead to injuries and fatalities. The incidences of fatalities are higher than drivers of four wheelers or motor cyclist.

Method- Out of 734 Injuries and 213 fatalities were recorded in medico-legal records. The causes, types of injuries age group, causes of fatalities were also studied.

Results- The major age group was between 10-20 had 210(28.6%) followed by age group 61-70 had 142(19.3%). The major history of pedestrian were 210(28.6%) alcoholic, followed by 173(23.5%) were busy in mobile speaking. The major fractures were 69(9.40%) fractions of sternum, 176(23.9%) fracture of skull. 185(25.2%) intra-cranial hemorrhage. The major causes of fatalities were hemorrhage and shock 138(64.7%), followed by head injuries57(26.7%).

Conclusion-

Key words:- *Injuries, Fatalities, Medico-legal, Hemorrhage, Fractures*

Introduction

Pedestrians are the common road users in India, with increasing traffic on roads has lead to major injuries and fatalities of pedestrians.[1,2]. The incidence of injuries and fatalities is significantly higher than in car occupants or motor cyclists in road accidents, which are further increasing at an alarming rate. The cause of pedestrian's injuries and fatalities are bilateral. It includes role of, drivers, pedestrians, roadway and environment [3]. Apart from this hurry to cross the roads, by both drivers and pedestrians is one of the major cause of pedestrian injuries and fatalities. Hence attempt was made to analyze the various causes, types of injuries and fatalities in pedestrians.

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Material and Methods

734 injured pedestrian were brought to IIMS & R warudi, Jalna (district) Maharashtra were studied out of 734, fatality was 213 pedestrian

Inclusive criteria- The criteria pedestrian of different age group 10 to 70 years old were selected for study. Majority of them were alcoholic, visually, mentally auditory challenged.

Exclusion criteria – The patients had an intention to commit suicide and reported in MLC report was excluded from the study.

Method- Pedestrians with injuries and fatalities in road accidents were brought to IIMS & R Warudi: Jalna (Dist) Maharashtra was studied. Out of 734 injuries 213(2.9%) had fatalities. Injuries of the different parts of body, fractures of skull, intracranial hemorrhage, fracture of long bones multiple trauma were studied from x-ray, USG, CT scan/MRI in injured pedestrian, medico-legal case reports, additional information was collected from relatives and police department. The

duration of the study was April 2016 to Dec-2018,

Statistical analysis- The different age groups, cause of pedestrian injury to viscera. Head injuries were classified with percentage. The ratio of male and females were 2:1

Observation and Results

Table-1 –Study of different age groups of pedestrian injuries and fatalities 210(28.6%) victims between 10-20 years of age, 129(17.5%) victims were aged between 21-30 years, 77(10.4%) victims were aged between 31-40 years 66(8.99%)victims were aged between 41-50 years, 110(14.9%) victims were aged between 51-60 years, 142(19.3%) were aged between 61-70 years.

Table-2 –History of the pedestrian injured and fatalities 210(28.6%) were alcoholic, 89(12.1%) had visual problems, 20(2, 72%) had auditory challenged, 173(23.5%) were mentality challenged, 147(20%) were busy in mobile speaking, 95(12.9%) were playing on roadside.

Table-3-Study of injuries to pedestrian 69 (9.40%) had fractures of sternum, 16(2.17%) had injury to heart, 48(6.53%) had injury to lungs 6(0.81%) had injury to Aorta, 15(2.04%) had injury to stomach, 59(8.03%) had injury to liver 24(3.26%) had injury to spleen 3(0.40%) had injury to kidney, 176(23.9%) had fracture of skull, 185(25.2%) had intra-cranial hemorrhage 62 (8.44%) had fracture of long bone, 71(9.67%) had multiple fractures.

Table-4- Cause of fatalities in pedestrians- 57 (26.7%) death was due to head injuries and intra-cranial hemorrhage 138(64.7%) deaths due to hemorrhage and shock 13 (6.10%) had septicemia, 5(2.34%) had Uremia.

Table-1: Study of different age groups of pedestrian injuries and fatalities

(No of patients 734)

Sl.No	Age Group	No. of Patients	Percentage (%)
1	10-20	210	26.6
2	21-30	129	17.5
3	31-40	77	10.4
4	41-50	66	8.99
5	51-60	110	14.9
6	61-70	142	19.3

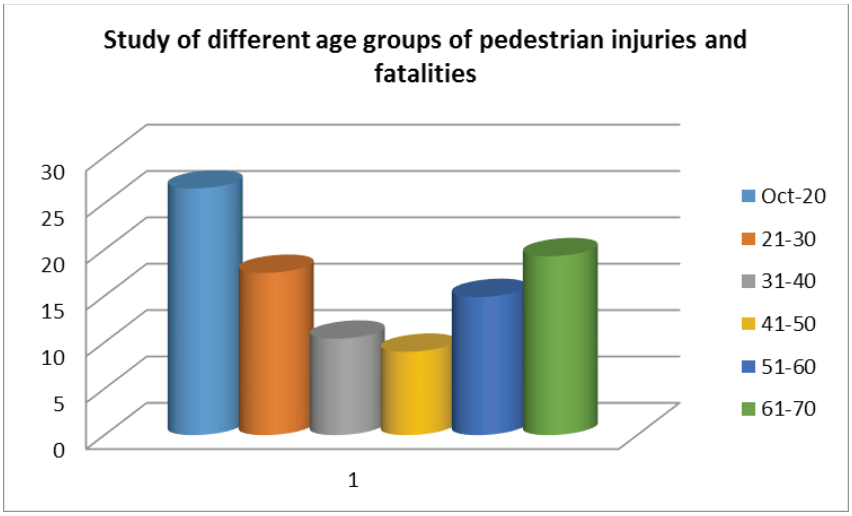


Table-2: History of the pedestrian injured and fatalities

(No of patients 734)

Sl.No	Particular	No. of Patients	Percentage (%)
1	Alcoholic	210	28.6
2	Visual problem	89	12.1
3	Auditory problems	20	2.72
4	Mentally challenged	147	20
5	Busy in mobile speaking	173	23.5
6	Playing the road side	95	12.9

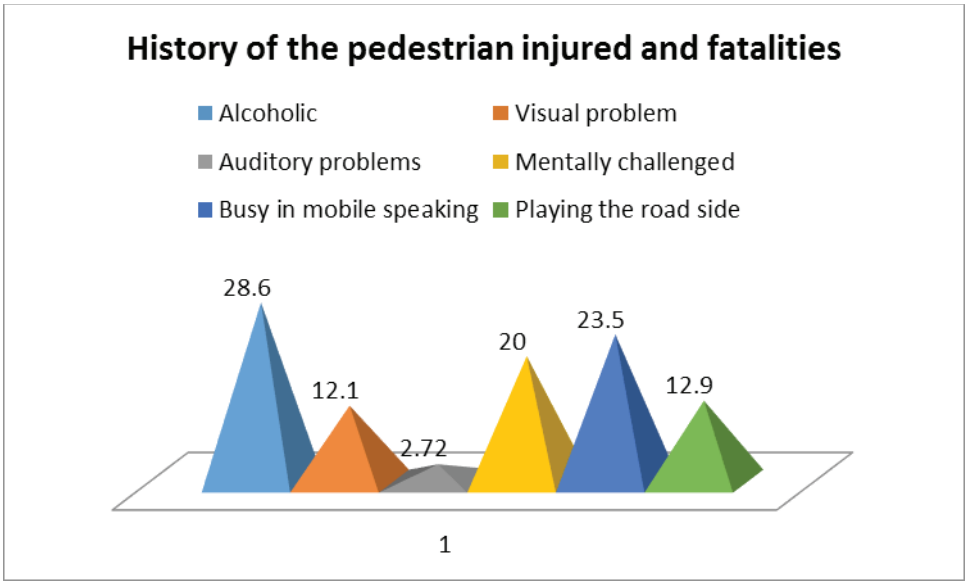


Table-3: Study of injuries to pedestrian

(No of patients 734)

Sl.No	Structure or organs injured	No. of Patients	Percentage (%)
1	Fractures of sternum	69	9.40
2	Heart	16	2.17
3	Lungs	48	6.53
4	Aorta	06	0.81
5	Stomach	15	2.04
6	Liver	59	8.03
7	Spleen	24	3.26
8	Kidney	03	0.40
9	Fracture of skull	176	23.9
10	Intra Cranial hemorrhage	185	25.2
11	Fractures of long bones	62	8.44
12	Multiple fracture	71	9.67

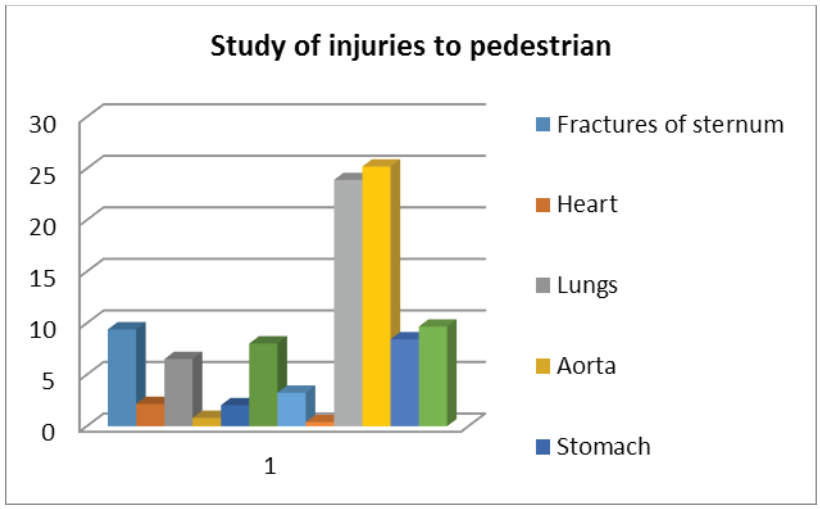
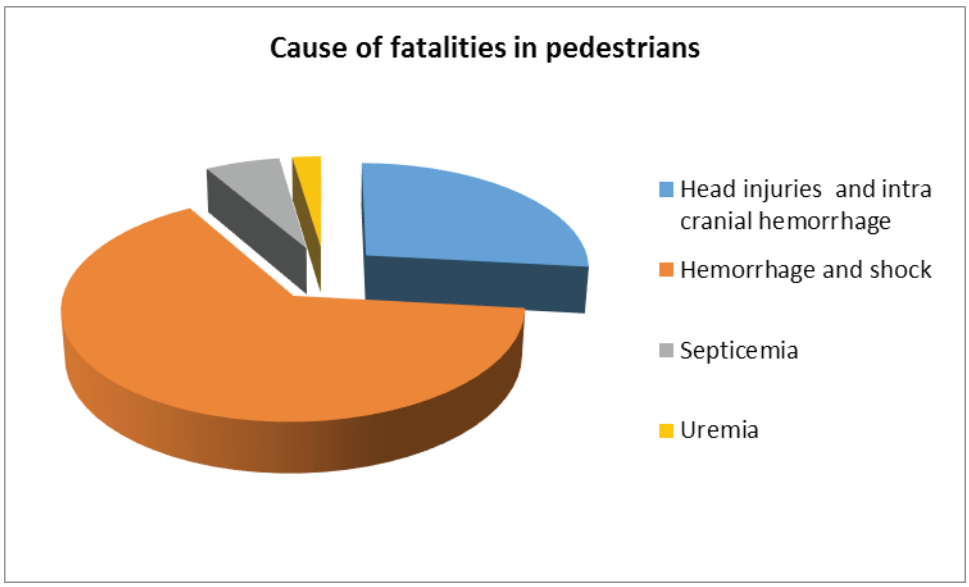


Table-4: Cause of fatalities in pedestrians (No of patients 213)

Sl.No	Cause of death	No. of Patients	Percentage (%)
1	Head injuries and intra cranial hemorrhage	57	26.7
2	Hemorrhage and shock	138	64.7
3	Septicemia	13	6.10
4	Uremia	15	2.34



Discussion

In the present study of pedestrian injuries and fatalities, of Maharashtra population. The age group study was-210(28.6%) were between 10-20 years of age, 129(17.5%) were aged between 21-30 years, 77(10.4%) were aged between 31-40 years 66(8.99%) were aged between 41-50 years, 110(14.9%) were aged between 51-60 years, 142(19.3%) were aged between 61-70 years (Table-1). History of the pedestrian was 210(28.6%) were alcoholic,

89(12.1%) had visual problems, 20(2, 72%) had auditory problems, 147(20%) were mentality challenged, 173(23%) were busy in mobile speaking, 95(12.9%) were playing on roadside (Table-2). The injuries to pedestrian 69 (9.40%) had fractures of sternum, 16(2.17%) had injury to heart, 48(6.53%) had injury to lungs, 6(0.81%) had injury to Aorta, 15(2.04%) had injury to stomach, 59(8.03%) had injury to liver 24(3.26%) had injury to spleen liver, 3(0.40%) had injury to kidney, 176(23.9%) had fracture of skull 185(25.2%) had intra-cranial hemorrhage 62 (8.44%) had fracture of long bone, 71(9.67%) had multiple fractures (Table-3). The cause of fatalities in pedestrians- 57 (26.7%) death was due to head injuries and intra-cranial hemorrhage 138(64.7%) deaths due to hemorrhage and shock 13 (6.10%) had septicemia, 5(2.34%) had Uremia (Table-4) These findings were more or less in agreement with previous studies[4,5,6].

Pedestrian can be defined as a person on foot, walking running jogging, and hiking, sitting or lying down. Walking transport modes, where relatively unprotected road users interact with traffic of high speed and mass. This makes pedestrians vulnerable. They suffer the most severe consequences in collisions with other road users interact with traffic of high speed and mass. of the vehicle against him/her[7]. Collisions between pedestrians and bicyclist or motor vehicle are the major problems in the countries that are becoming motorized and high rates of walking and bicycling [8]. Pedestrians are commonly referred to as vulnerable road users because in collisions with motor vehicles the lack of protective structure and differences in mass height and make their injury susceptibility, protecting them is a challenge, because road infrastructure typically have built for motor vehicles with little attention to those that moving on foot who may wish to travel on or along side roads or cross them or change direction at intersections[9].

The injuries and fatalities of the pedestrian can be divided into three phases (stages), pre-crash, crash and post crash, pre-crash is the phase of prevention. The crash phase is the traumatic event, that involves the exchange of energy or the kinematics (mechanics of energy). Lastly, the post crash in the phase of patients care [10].

The pedestrian's road crossing behavior has been explained in the terms of minimum gap acceptance value by using a rolling gap. The driver's yielding this minimum gap acceptance plays vital role for pedestrian to escape from collusion which may cause injury or fatalities[11]. The pedestrian crossing or passing the un-identified or prohibited area may cause injuries and fatalities. Most of the pedestrian were impatient and could not wait for passage of trains, vehicles, Lorries etc, were more vulnerable to get injured and fatalities.

Summary and Conclusion

The present study of pedestrian injuries and fatalities highlights Causes and types of injuries and deaths. Moreover it is advocated that, wide, safe roads, deployment of more traffic police force, stringent punishment can mitigate such accidents. In addition to this awareness programs of traffic rules to both pedestrian and drivers will be more effective to control road accidents.

This research paper was approved by Ethical Committee of IIMS & R warudi, Badnapur (Tq) Jalna (dist) Maharashtra

-No **Conflict of Interest**

-No **Funding**

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