Original Research Article

Study of Pedestrian Injuries and Fatalities in Road accidentsat Tertiary Care Hospital in Maharashtra

Ganesh Dhondiraj Niturkar[1], Arvind Rangnathrao Harbade[2], K. U.Zine[3]

[1]Associate Professor, [2]Senior Resident, [3]Professor and Head, Department of Forensic Medicine and Toxicology, Government Medical College and Hospital Panchakki Road, Aurangabad Maharashtra.

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Abstract

Background: The Majority of the roads are narrow in India and unrepaired with multiple pits. Heavy traffic, rash and negligent driving lead to injuries to pedestrians and also cause fatal accidents.

Method:450 pedestrians were brought to the Government Medical College and Hospital, Aurangabad, and studied. Out of 450 cases, 63 (14%) had fatal fractures that were studied with an x-ray, CT scan, or MRI. Serious pedestrians were admitted to the ICU; the remaining was treated by Orthopaedics and neurosurgeons.

Results:128 (23.4%) were alcoholics, 54 (12%) had a visual problem, and 15 (3.2%) had Auditory problem: 38(8.44%) were mentally challenged (also included cases with psychiatric illness), 51(11.3%) were on antidepressant treatment, 104 (23.1%) were busy in mobile speaking, and 60 (13.3%) were playing on the roadside. Maximum fractures observed were 107 (22.8%); cranial haemorrhage was followed by 98 (21.7%) fracture of the skull. There were 02 (0.44%) injuries to the kidney superficially or subcutaneously as four wheelers and two wheelers hit the pedestrians at the lumbar region, 3 (0.66%) in the aorta. The fatalities were 63 (14%). Among them, 40 (63.4%) had haemorrhage and shock; 16 (25.3%) had head injuries; 5 (7.93%) had septicaemia; and 2 (3.10%) had uraemia.

Conclusion: Well-built roads, fencing or barriers for pedestrians, awareness of traffic rules, and stringent punishment for both pedestrians and drivers of vehicles violating traffic rules can minimize pedestrian road accidents and fatalities.

Keywords: Intracranial, haemorrhage, Fatalities, Skull fractures, speaking on mobile, mentally challenged

Introduction

Road Traffic accidents analysis require to conducting in-depth collision analysis identifying the collision, causation and contributing factors in different types of collisions including the role of the drivers and pedestrian, vehicle's roadways, and types of road environments(1).

Pedestrians are common road users in India; increasing traffic on roadside hasled to major injuries and fatalities of pedestrians(2). The incidence of injuries and fatalities is significantly higher than in car occupants or motorcyclists in road accidents, which are further increasing at an alarming rate(3). The cause of pedestrian injuries and fatalities are bilateral(4). It includes the role of, drivers also. Hence an attempt

Corresponding Author: Ganesh Dhondiraj Niturkar, Associate Professor, Department of Forensic Medicine and Toxicology, Government Medical College and Hospital Panchakki Road, Aurangabad Maharashtra.

Email ID: nitukarg@gmail.com

is made to evaluate the various type of injuries of pedestrians and fatalities of various age groups.

Material and Methods

450 (Four Hundred Fifty) injured, pedestrians aged between10 to70 years, brought to Government Medical College and Hospital Panchakki Road, Aurangabad were studied.

Inclusive criteria: pedestrian of different age groups of 10 to 70 years old were hurried to cross the roads, many of them were alcoholic, visually, auditory challenged, and mentally challenged (also included cases with psychiatric illness)were selected for the study.

Exclusion criteria: The pedestrian who had the intention to commit suicide, reported in the MLC report were excluded from the study.

Method: Out of 450 Pedestrians injuries, 63 (14%) had fatalities, injuries to the different parts of the body, fractures of the skull, intracranial haemorrhage fractures of long bones, and multiple trauma recorded from x-ray, USG, CT scan/MRI (if necessary) in injured pedestrian, medico-legal case reports, additional information was collected from relatives and police department. Serious or unconscious were admitted to ICU units, remaining were referred to orthopaedic and Neuro Physician, Neurosurgeon.

The duration of the study was January – 2022 to January – 2023.

Statistical analysis: Causes of pedestrian injury to viscera, and head injuries history of pedestrians were classified with percentage. The statistical analysis was carried out in SPSS software. The ratio of male and female's were 2:1

Table 1: History of the Pedestrian injuries and fatalities

(No. of patients: 450)

Sl. No	Details	No. of Cases	Percentage (%)
1	Alcoholic	128	28.4
2	Visual problem	54	12
3	Auditory problems	15	3.33
4	**Mentally challenged**		
	a) Mentally retarded	38	8.44
	b) Patients on antide pressant	51	11.3
5	Busy in mobile speaking	104	23.1
6	Playing roadside	60	13.3

Table 2: Study of injuries to the pedestrian

(No. of patients: 450)

Sl. No	Partsororgans involved	No. of Patients	Percentage (%)
1	Fractures of sternum	41	9.11
2	Heart	9	2.0
3	Lungs (external or superficial)	28	6.22
4	Aorta	03	0.66
5	Stomach	11	2.44
6	Liver	38	8.44
7	Spleen	14	3.11
8	Kidney	02	0.44
9	Fracture of skull	98	21.7
10	Intra Cranial haemorrhage	102	22.6
11	Fractures of long bones	38	8.44
12	Multiple fractures	43	9.55

Table 3: Cause of fatalities inpedestrians

(No. of patients: 63)

Sl. No	Cause of Death	No. of Patients	Percentage (%)
1	Head Injuries and intra cranial Haemorrhage	16	25.3
2	Haemorrh age and Shock	40	63.4
3	Septicaemia	5	7.93
4	Uraemia	2	3.17

Observation and Results

Table-1: History of the pedestrian injuries and fatalities – 128 (28.4%) were alcoholic, 54 (12%) had a visual problems, 15 (3.3%) had an auditory problems, 38(8.44%) were Mentally challenged (also included cases with psychiatric illness), 51 (11.3%) were on antidepressant treatment, 104 (23.1%) were busy in mobile speaking, 60 (13.3%) were playing on the roadside.

Table-2: Study of injuries to pedestrians 4 (9.11%) had a fractures of the sternum 9 (2%) were injured to the heart, 28(6.2%) to the lungs (external or superficial), 3(0.66%) to the Aorta, 11(2.44%) to the stomach, 38(8.44%) to the liver, 14(3.11%) spleen, 2(0.44%) kidney, 98(21.7%) fractures of the skull, 102 (22.6%) had intracranial haemorrhage, 38 (8.44%) had a fractures to long bones, and 43(9.22%) had multiples fracture.

Table-3: Causes of fatalities – 16 (25.3%) had head injuries and intra cranial, hemorrhage, 5(7.93%) had hemorrhagic shock, 2(3.17%) had Uremia.

Discussion

The Present study of pedestrian injuries and fatalities, in accidents in Maharashtra population. 128(28.4%) alcoholic, 54(12.1%) visual problem spedestrians, 15(3.33%) had Auditory problems,38(8.44%) were mentally challenged (also included cases with psychiatric illness), 51 (11.3%) were on antidepressant treatment, 104(23.1%) were busy in Mobile speaking, and 60(13.3%) were playing on the roadside (Table-1). 4(9.11%) had Fractures of the sternum, 9(2%)injury to the heart, 28(6.22%) to the lungs (external or superficial), 3(0.66%) to Aorta, 11(2.44%) to the stomach, 38(8.44%) to the liver, 14(3.11%) spleen ,2(0.44%) to the kidney, 98 (21.7%) had a fractures of the skull, 102 (22.6%) had intracranial haemorrhage, 38 (8.44%) fractures of the long bone, and 43 (9.55%) had multiple fractures (Table-2). The cause of fatalities were 16 (25.3%) head injuries and intracranial haemorrhage, 40(63.4%) haemorrhage And shock, 5 (7.93%) had septicaemia, 2 (3.17%) had Uraemia (Table-4) These findings were more orless in agreement with previous studies[4][5][6].

A Pedestrian can be defined as a person on foot, walking running jogging, hiking, sitting, or lying down. Walking transport modes, where relatively unprotected road users interact with traffic of high speed and mass. This make spedestrian vulnerable. They suffer the most severe consequences in collisions with other road users interacting with traffic of high speed and mass. of the vehicle against him/her[7]. Collisions between pedestrians and bicyclists or motor vehicles 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 make their injury susceptibility, protecting the misachallenge be cause road infra structure typically have built for motor vehicles with little attention to those that moving on foot who may wish to travel on or alongside roads or cross them or change direction at intersections[9].

The injuries and fatalities of the pedestrian can be divided into three phase s (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 kinematics (mechanics of energy). Lastly ,the post-crash phase of patientcares.[10]

The pedestrian's road crossing behaviour has been explained in the terms of minimum gap

acceptance value by using a rolling gap. The driver's yielding of this minimum gap acceptance plays a vital role in a pedestrian to escape from collision which may cause injury or fatalities[11]. Pedestrian crossing or passing the unidentified or prohibited area may cause injuries and fatalities. Most of the pedestrians were impatient and could not wait for the passage of trains, vehicles, Lorries, etc, and were more vulnerable to getting injured and fatalities.

Summary and Conclusion

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

Limitation of the study: Owing to the tertiary location of a research center, a small number of patients and lack of the latest technologies, we have limited findings and results.

This research paper was approved by the Ethical Committee of Government Medical College and Hospital Panchakki Road, Aurangabad Maharashtra-431001

Conflict of Interest: No

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