

AN AUTOPSY STUDY ON PATTERN OF FATAL INJURIES SUSTAINED BY PEDESTRIANS

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ABSTRACT: Road traffic accidents are among the most common cause of death in India. According To WHO statistics it is the 9th leading cause of death in 2004 and projected to be the 5th leading cause by 2030.¹ Among road traffic accidents (RTA) deaths, two wheeler accidents are common, followed by pedestrians. Pedestrian forms the most vulnerable group among road users. The current study was done for a period of five years on fatal Pedestrian's accidents. The incidence was common among the age group of 41 to 50 years with male predominance. Majority of individual died on spot without receiving any preliminary treatment, majority of incidence was seen between 12.00 Noon to 6.00 PM. Externally injuries are common in trunk followed by head and neck. Internally brain involvement was common followed by abdominal viscera. Majority of death were due to head injuries. The incidence of accidents has been increased with current trend of increased vehicle load on roads and with negligent attitude in following the traffic rules.

KEYWORDS: Road traffic accidents, Pedestrians, Injury, Mortality.

INTRODUCTION: Road death and injuries in India are publicly glaring, while road safety is professionally lacking and politically missing. Global experience reveal that road accidents are preventable and predictable. Implementation of road safety in India requires change in the mind set, by moving from relative approach to proactive approach.²

Incidences of accidents are increasing worldwide. Probably one third of road traffic accidents are seen in densely populated areas of southern asia.³ A large variety of injuries are sustained by a person in road traffic accidents, pattern of injuries depend on primary impact(the first part struck), secondary impact(injuries caused on further struck by vehicle), tertiary injuries are also seen when person falls on ground.⁴

Accidents are seen in all age groups, but most vulnerable population are adult males in their middle age, who are the earning members of the family and so an active road users. When a pedestrian is struck by the motor vehicle severity depends on several factors like type of vehicle, mechanism and speed, physical characteristic features, braking and whether victim is adult or child.⁵

AIMS AND OBJECTIVE:

1. To study the pattern of injuries in pedestrians in relation to age, sex, vehicle involved, time of incident and survival period.
2. To study pattern of external and internal injuries sustained by pedestrian.

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MATERIAL & METHODOLOGY: The prospective study was done for a period of five years from 2010 to 2014 of all the pedestrian death that was brought to Vydehi Hospital Mortuary. The information was collected from police information form 146(i) & (ii), history from relative when required and from autopsy finding. A proforma was prepared for the same and information was collected. The type of the study that was done was a descriptive. Statistical analysis has been done accordingly.

Inclusion Criteria: All the cases of pedestrian death that was brought for autopsy examination at Vydehi Hospital Mortuary from 2010 to 2014.

Exclusion Criteria: Decomposed cases where the interpretation of injuries was difficult.

RESULTS AND DISCUSSION: Most of the deaths requiring autopsy from eastern part of Bangalore was brought to vydehi Hospital mortuary, during the period of 2010 to 2014. Among the total of 279 number road traffic accidents, total number of deaths of the pedestrians was 80(28.6%).

Age of victim in years	No. of cases
<10	11
11-20	1
21-30	15
31-40	11
41-50	17
51-60	10
61-70	8
71-80	6
>80	1

Table 1

Sex	No. of cases
Male	59
Female	21

Table 2

Vehicles involved	No. of cases
Two wheeler	15
Three wheeler	1
Light motor vehicle	34

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Heavy motor vehicle	22
Not known	8

Table 3

Time of Incident	No. of cases
6AM-12 Noon	19
12Noon-6PM	29
6PM-12AM	20
12AM-6AM	8
Not Known	4

Table 4

Survival Period	No. of cases
Spot	29
<6hours	27
6-12hours	3
>12hours	16
Not known	5

Table 5

Treatment	No. of cases
Received	24
Not received	56

Table 6

Regions involved	Abrasion	Contusion	Laceration	Crush	Sutured wound	Infected	Healed	Incised wound
Head and neck	32	24	31	4	7	2	2	NIL
Thorax, abdomen and pelvis	35	19	6	NIL	3	NIL	2	NIL
Upper limbs	43	19	10	NIL	1	NIL	NIL	NIL
Lower limbs	41	22	11	NIL	1	NIL	1	1

Table 7

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Internal injuries to brain	No. of cases
Sub arachnoid haemorrhage	44
Subdural haemorrhage	37
Extradural haemorrhage	2
Intraventricularhaemorrhage	1
Contusion	7
Laceration	4
Drained out	5
Pale and oedematous	9

Table 8

Skull fracture	No. of cases
Linear	31
Comminuted	5
Diastatic	2
Hinge	1
Ring	1

Table 9

The incidence of death following road traffic accidents was common among the two wheeler rider and pillion followed by the pedestrian. According to the current study, Male predominance was seen, this was similar to a study that was done in central India where among 224 cases 107 cases were those of two wheeler and 44 were that of pedestrian, increased incidence was also noticed among the male population.

In the current study the incidence was common among 41-50 years age group followed by 21-30 years and the pedestrians in majority of cases was hit by the light motor vehicle that is in 34 cases which was mainly bycars followed by heavy motor vehicles which was noticed in 22 cases.

This can be compared with a study done in B.P. Koirala Institute of Health Sciences, Dharan, Nepal where 17 cases are of the age group 41-50 years and 15cases between the age group of 21-30 years. 38 cases are caused by four wheeler followed by heavy motor vehicle.

In the current study time of occurrence of accidents were more during 12noon to 6PM in 29cases followed by 6PM to 12AM in 20 cases. Treatment was given in 24 cases and those who expired without any preliminary treatment was 56 cases. This was in contrast with a study done by emergency department in Bangalore where the time of occurrence was more during 6PM to 12PM.

Head and neck injuries were common with abrasion in 32 cases followed by laceration in 31 cases; head was crushed in 3 cases. Following head and neck, involvement of trunk was the second common area in 35 cases there were abrasions followed by contusion in19 cases and laceration in 6 cases. Extremities were also involved, in upper limbs there were abrasion in 43

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cases and laceration in 10 cases. In lower limbs 41 cases showed abrasion and 11 cases showed laceration.

On considering the pattern of injury to internal organs brain showed subarachnoid haemorrhage in 44 cases, subdural haemorrhage in 37 cases, extradural in 2 cases and interventricular bleed in 1 case, there was contusion of brain in 7 cases, brain had been drained out in 5 cases. On considering the fractures linear fracture is seen in 31 cases, facial bone fracture in 6, comminuted in 5 cases. Atlantooccipital dislocation in 8 cases. This was in combination in majority of cases but in some case it had appeared in individual cases

On considering internal organs of trunk liver laceration is seen in 17 cases followed by laceration of spleen in 11 cases, laceration of lungs in 7 cases and heart in 4 cases. Haemorrhages in mesentery of intestine is seen in 4 cases and in one case pancreas is involved. Hemothorax and haemoperitoneum is seen in 21 and 18 cases. Ribs are fractured in 40 cases, sternum fracture in 6 cases and clavicle in 4 cases. Spinal cord was crushed and transected in one each. Bladder contusion in 2 cases were noted. In few cases there were combination of laceration involved.

Fracture of the extremities is also noticed in some cases fracture of tibia and femur bone was seen in 6 cases each, hip joint dislocation is seen in 6 cases. Arm bone is fractured in 6 cases and forearm bone in One case.

This study can be compared with the study done in centre India the head injuries are common followed by thoracic and abdominal region. However study done by Suresh Kumar Shetty et al and Reddy N. B, Hanumantha et al the thoracoabdominal injuries are common followed by the head region and then involving the extremities.

CONCLUSION: This was an autopsy study done on pattern of fatal pedestrian accidents, for a period of five years in Vydehi Institute of Medical sciences & Research Centre, Bangalore:

- The study concluded pedestrian involvement was second which followed the two wheeler accidents.
- The age group commonly involved is between 41-50 years
- Male predominance was common in the current study as they are vulnerable group.
- The accidents to pedestrian was common with light motor vehicle followed by two wheeler
- Incidences were noticed more during the afternoon period, death occurred on spot in majority of cases that is without receiving preliminary treatment.
- Region commonly involved in fatal injury is head, followed by trunk and then extremities.
- In majority of cases abrasion was common followed by laceration, crush of head is also seen in some cases. Indicating head is most vulnerable region
- In majority of cases subdural and sub arachnoid haemorrhage is common. And linear fractures are most common type of skull fracture.

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