

Study of Fatal Head Injury Due To Road Traffic Accident In Tertiary Care Hospital Cims Bilaspur

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Abstract- Road accidents continue to be a leading cause of death, disabilities and hospitalization in the country despite our commitment and efforts. India ranks first in the number of road accident deaths across the 199 countries and accounts for almost 11% of the accident related deaths in the World. To analyze the magnitude of head injury in fatal RTA cases, present study was conducted in the department of Forensic Medicine Toxicology, Chhattisgarh institute of medical sciences Bilaspur for the duration of 2 year on the RTA cases which came for postmortem examination in our department. 105 victims were taken for the study most of the accident happened at evening 6pm -12 am ,There was a marked male preponderance (89%), and most vulnerable age group was 21-40 years (59%). Two-wheeler occupants (73%) were most commonly involved. Among the intracranial hemorrhages, subdural hemorrhage (SDH) was commonest (61%). In relation to duration of survival time 33% of victims died on the spot followed by 3-7 days of accident.

Key word: Road traffic accident, head injury, hemorrhage.

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I. Introduction:

As per the Road Accident Report for 2019, a total number of 449,002 accidents took place in the country during the calendar year 2019 leading to 151,113 deaths and 451,361 injuries. In percentage terms, the number of accidents decreased by 3.86 % in 2019 over that of the previous year, while the accident related deaths decreased by 0.20 % and the persons injured decreased by 3.86. The decline in road accidents, killings and injury reported during the calendar year 2019 appear to have been a result of the Motor Vehicle Act implemented in States from September 1st 2019 which focused on road safety and included, inter-alia, stiff hike in penalties for traffic violations as well as electronic enforcement. The other trends noted in 2019 were very similar to those recorded in the previous years. The working age group of 18 – 60 accounted for a share of 84 percent in the total road accident deaths. As per the World Health Organization, accident related deaths, are known to be the eighth leading cause of death and the first largest cause of death among children aged 5-14 and adults in the age 15-29. Globally, 54% of accident related deaths are pedestrians, cyclists and motor cyclists. This results in considerable economic losses not only to individuals, their families, but also to the nations as a whole. The losses are on account of cost of treatment as well as lost productivity for those killed or disabled by their injuries, loss of productivity of family members who need to take time off work or school to care for the Road transport remains the most favored mode of transport for both freight and passenger movement in India. The fast-growing population, exceptional rate of motorization coupled with the evergrowing urbanization has made people vulnerable to frequent road accidents resulting in fatalities, injuries/disabilities etc¹. As defined by National Advisory Neurological Disease and Stroke Council, head injury is a morbid state, resulting from gross or subtle structural change in the scalp, skull, and/or content of skull produced by mechanical force²

II. Materials and Methods:

The present study was conducted in department of Forensic Medicine & Toxicology, Chhattisgarh institute of medical sciences Bilaspur (C.G)). It includes the study & analysis of 105 cases in which cause of death was head injury due to RTA, over a period of one 2 year from 2019- 2021 . The epidemiological data such as age, sex, time of accident, survival time, type of victim, type of vehicular occupants & all pathological type of intracranial hemorrhage were noted at the actual autopsy examination with related history as well.

III. Observation:

Age children adolescent adult old age group more injury present in adult age group injury related observation with head injury pattern of injury abrasion laceration contusion haematoma maximum injury located scalp area .

Sex male are more susceptible to accident than female due to exposure of male to outer world and extracurricular activities.

Income group socio economic condition in this region rich suffer less and lower income group suffered more as compare to middle income group .

Seasonal variation summer as clear season, rainy season and winter as fog season summer season accident are more in occurrence than other season

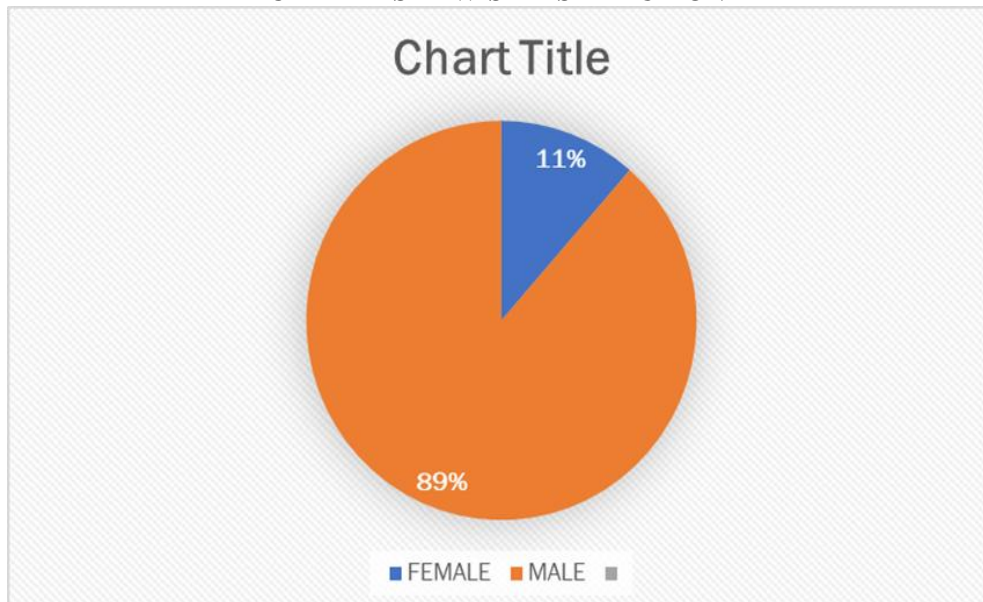
Diurnal variation observe that evening to night period are more prone to accident

Traffic rules 100% cases 2 cases comes with violation of traffic rule

Among vehicle two wheeler are most common among accident and least common vehicle.....

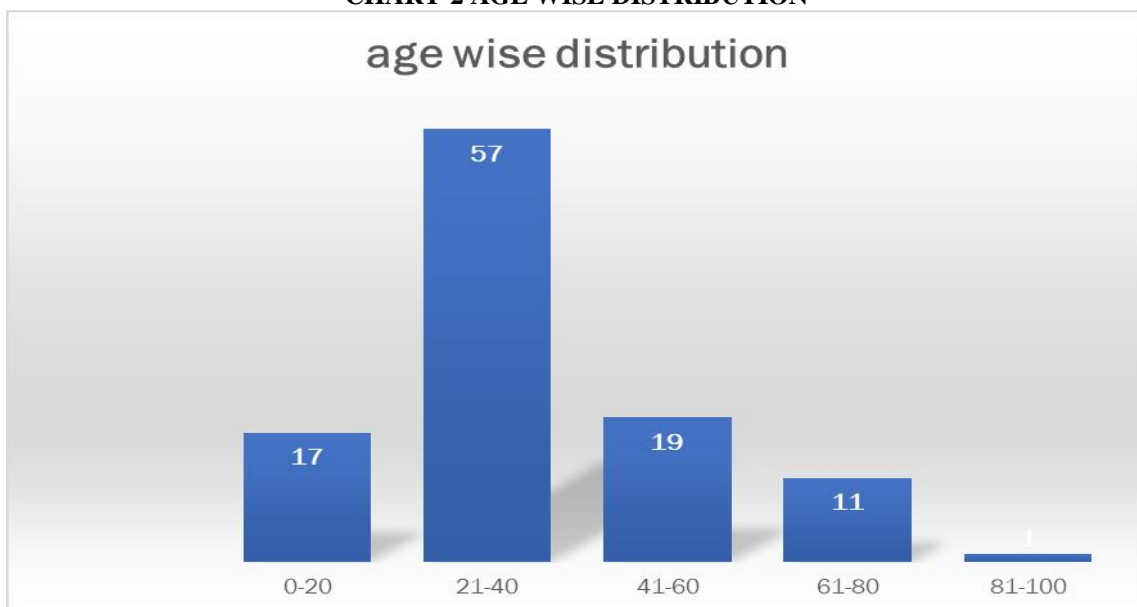
Event associated death and utilization of medical services related factor included under the survival period and type of head injury

CHART-1 SEX WISE DISTRIBUTION



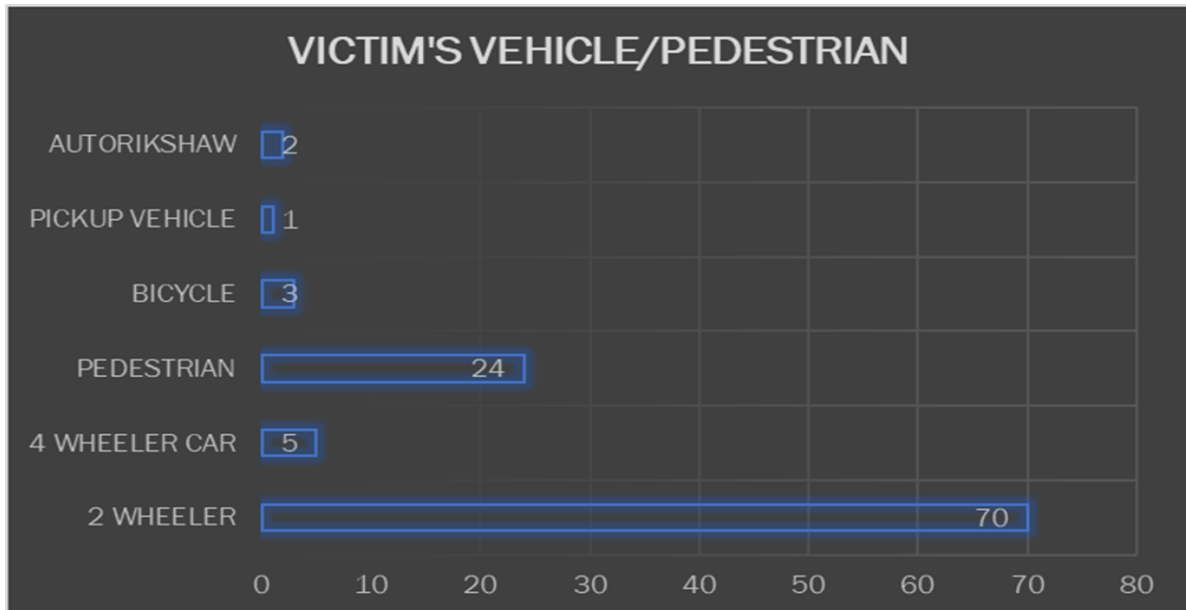
Total 105 cases studied during one year period. Male comprised (89%) and female (11.%) makes M: F ratio almost 7.75:1

CHART-2 AGE WISE DISTRIBUTION



During the study of age wise distribution of fatal head injuries it has been observed that maximum no of cases fall under age group 21-40 years 59% (57 cases) Followed by age group 41-60 years (19 cases), than 0-20 years (17 cases) and minimum no of cases were observed under 81-100 years (01 cases)

CHART-3 VICTIM'S VEHICLE /PEDESTRIAN DISTRIBUTION



In our study our observation on the vehicles was out of 105 victims 70(73%) of them were on two-wheeler, 24 were pedestrian followed by four wheeler which were 5 in number, followed by autorikshaw which were 2 in number, 3 were in bicycle and 1 was in a pickup.

CHART -4 INJURY WISE DISTRIBUTION



In our study we have observed maximum number of head injuries are SDH 61(64.05%) out of total victims suffered from the same, followed by EDH 30(31.5%) out of total cases, SAH was 17 and in association with other injuries, skull bone fracture was found in 34 cases associated with other injuries.

CHART -5 SURVIVAL PERIOD

| NO | DURATION | TOTAL | % |
|----|-------------|-------|--------|
| 1 | SD | 32 | 33.60% |
| 2 | WITHIN 1 HR | 7 | 7.35% |
| 3 | 1-6HR | 9 | 9.45% |
| 4 | 6-12 HR | 10 | 10.50% |
| 5 | 12-24 HR | 13 | 13.65% |
| 6 | 1-3 DAYS | 6 | 6.30% |
| 7 | 3-7 DAYS | 15 | 15.75% |
| 8 | > 7 DAYS | 13 | 13.65% |

Our study shows that majority of victims died on the spot (33.60%), followed by 3-7 days(15.75%), 12-24 hr and >7 days (13.65%), 10.50% were under 6-12 hr, and least(6.30%) were observed under 1-3 days.

IV. Discussion:

Out of 105 cases of fatal head injury during RTA it has been observed that there were 93 male and 12 female which is 89% male and 11% female were observed male and female ratio is 7.75:1. These findings are similar to Arvind kumar et al³ who also found Males comprised 88.22% of the total fatalities, while females accounted for 11.77%, Dr Dhaval et al, G mahendra et al, Dipak kumar das et al^{4,5,6}

During the study of age wise distribution of fatal head injuries it has been observed that maximum no of cases fall under age group 21-40 years (57 cases) Followed by age group 41-60 years (19 cases), then 0-20 years (17 cases) and minimum no of cases were observed under 81-100 years (01 cases) Our observation was found consistent with various other studies Hemlata et al Hemlata et al; found that out of total 400 RTA cases, majority of the cases 133 (33.25%) were in age group of 15-25 years, followed by 120 (30%) in age group of 25-35 years. The least RTA cases were found in age group of < 15 years (16, 4%) and above 65 years (10, 2.5%)⁷. Our study is also consistent with Dr sunil soni et al, Salgado MSL et al, Chandra J et al^{8,9,10}

The maximum numbers of RTA cases (45.71%) were reported to occur between 6pm-12am followed by the period of 12pm-6pm (39.04%) then between 6am-12pm(9.52%) and lowest between 12 midnight to 6 AM(4.76%) Dr anand menon et al¹¹ suggest Most of the accidents have occurred during 12.01 - 18.00 hrs (39 %) followed by 18.01 - 24.00 hrs (27 %) and least during 0.01 - 6.00 hrs (19 %) this data differ from our study, also dr dhaval et al, nilambar jha¹² have different opinion and similar with dr harnam et al¹³, similar trend were seen by norman¹⁴, and Dipak kumar das et al

- In our study our observation on the vehicles was out of 105 victims 70(73.5) of them were on two-wheeler, 24(25.5) were pedestrian followed by four wheeler which were 5 in number, followed by autorikshaw which were 2 in number, 3 were in bicycle and 1 was in a pickup.

Dr anand menon et al; also found that most of the occupants belonged to two wheelers (43 %) and occupants of light motor vehicles and heavy motor vehicles were almost equally involved, which corresponds to 29 % and 28 % respectively, this study is similar to our study

This finding is similar to 2019 Ministry of Road Transport & Highways study, Savioe Selva Suresh , G Mahender, dr Dhaval, Dipak kumar das and gilbert had different finding then our as cars and pickup and trucks causes maximum no of accidents. Our study shows that majority of victims died on the spot (33.60%), followed by 3-7 day (15.75%), 12-24 hr and >7 days (13.65%), 10.50% were under 6-12 hr, and least(6.30%) were observed under 1-3 days. Whereas finding of Singh H is 39.5% deaths within 1hr, and of Sharma BR et al report 27% spot death & total 51% died within 6 hrs. The findings of this study reflect the severity of the injury, which in most of the cases are due to head injuries,

Dr anand menon et al; Of the total cases, 17 % of victims died on the spot, while 26 % of the victims were treated surgically. This study differs from our study,

Arvind et al; The commonest variety of intracranial emorrhage was subdural hemorrhage (n=1514,89.11%) followed by Subarachnoid hemorrhage (n=1240, 72.98 %). Extradural hemorrhage was

present in 344 cases (20.25 %) this finding is similar to our result subdural hemorrhages were maximum followed by extradural hemorrhage which not consistent with our finding.

Dr Dhaval et al; SDH was commonest type of intra cranial hemorrhage (31.42%), which is followed by multiple type (23.80%). The least observed hemorrhage was intraventricular (3.80%). This finding is consistent with our study, Menon A et al; this study also shows similar result with our study and also with G Mahender et al

V. Conclusion:

From the present study, following conclusions were derived regarding road traffic accidents, Males are more commonly involved in accidents. -Young adults between 21 – 40 years are more vulnerable to accidents. - Accidents are more during evening hours (06pm - 12 am) and afternoon hours (12pm – 06 pm). More accidents in two wheeler occupants than other vehicles and subdural hemorrhage (SDH) were commonest, such fatal head injury which is very alarming and highlights the need for taking urgent steps for establishing good pre-hospital care and provision of trauma services at site in India. Licensing authorities should adopt strict rules, regulations and traffic control devices. At the time of giving license training should be given in first-aid skills. Separate lanes for heavy and light motor vehicles, Pedestrian friendly paths, and strict implementation of traffic rules and regulations will definitely decrease the incidence of road traffic accidents and its fatalities.

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