

Study Of Pattern Of Fatal Head Injury Cases Due To Road Traffic Accidents In Bhavnagar Region, Gujarat.

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Abstracts: Introduction: Head injury is an important cause of mortality world wide as head is the most vulnerable part of the body involved in fatal road traffic accident. **Material and Methods:** The present study was under taken on 117 victims of road traffic accident who died due to injuries sustained on the head, which were autopsied at mortuary complex of Government Medical College and Sir Takhtsinhji General Hospital, Bhavnagar, Gujarat over a period of 1 year between 1st January 2011 to 31st December 2011. **Observation:** Most of the road traffic accident had taken place in the afternoon hours (12.01 P.M. to 6.00 P.M.).Majority of victims were found in age group of 21 to 30 years. Two wheeler occupants were the most commonly involved. Four wheeler occupants and pedestrians were least commonly involved. A large proportion of the victims died within 0 to 12 hours of the accident. **Conclusion:** Very high morbidity at place of accident or at initial phase of treatment is definitely alarming and highlights the need for taking urgent steps for establishing good pre-hospital care and provision of trauma services at site. [Modi A NJIRM 2014; 5(3) :80-83]

Key Words: Road traffic accident (RTA), Head injuries, Haemorrhage.

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Introduction: The head injuries, sustained from vehicular accident is an ever increasing trend, due to increase in population, number of vehicles on the road, speed of the vehicles, ignorance of traffic rules, avoidance of protective equipments and poor road conditions. WHO report in 2010 reported that developing countries like India, 2.2 million people had traumatic brain injury due to road traffic accident alone. As road traffic accidents contribute to 60 to 70% of all traumatic brain injury¹. Worldwide, road traffic accidents are the 9th cause of death. In developed regions, road traffic accidents are the 8th cause of death².

Material and Method: Present study was carried out in the year 2011[01/01/2011 to 31/12/2011]. During which total 1045 medico legal autopsies were conducted, out of which 117 autopsy cases of head injury due to road traffic accident were studied in detail. My article is purely based on my thesis work. Before starting my thesis, permission was granted by Institutional Review Board, Govt. Medical College, Bhavnagar. In

medicolegal autopsies, consent is not required and the doctor can remove from the cadaver anything that is essential for purposes of examination.

General particulars of each case for relevant information was obtained from detail post mortem examination, post-mortem register, police request letter, marnottar form, inquest panchnama and hospital indoor case papers. The age & sex wise distribution time of occurrence of road traffic accident, type of victims, type of vehicles involved and the pattern of cases of head injury were studied in detail.

Observation: Present study was carried out in the year 2011 at post-mortem room, Forensic Medicine Department, Govt. Medical College, and Sir Takhtsinhji General Hospital, Bhavnagar. Male comprised 76.06% and Females 23.94% of the total victims. Highest numbers of victims were found in the 21-30 years age group (29.81%) and least in the 61-70 and > 70 years age group.

Table 1: Sex Wise Distribution Of Cases Of RTA

Sr. No.	Sex	No. Of Cases	Percentage
1	Male	89	76.06%
2	Female	28	23.94%
	Total	117	100.0%

Table 2: Age Wise Distribution Of Cases Of RTA

Sr. No.	Age in years	No. Of Cases	Percentage
1	0-10	10	08.54%
2	11-20	14	11.96%
3	21-30	35	29.91%
4	31-40	17	14.52%
5	41-50	20	17.14%
6	51-60	09	07.69%
7	61-70	06	05.12%
8	>70	06	05.12%
	Total	117	100.0%

The time was divided into four periods of 6 hours interval as shown in Table-1. Most of the accidents have occurred during 12.01 P.M to 6.00 P.M (36.75%) followed by 6.01 A.M. to 12.00 noon (27.35%) and least during 12.01 A.M. to 6.00 A.M. (14.53%).

TABLE-3-Time of Event of Road Traffic Accident

Sr. No.	Period of event time	No. of Cases	Percentage (%)
1	6.01 a.m. to 12.00 noon	32	27.35%
2	12.01 p.m. to 6.00 p.m.	43	36.75%
3	6.01 p.m. to 12 midnight	25	21.37%
4	12.01 a.m. to 6.00 a.m.	17	14.53%

Head injury cases due to RTA were seen more in occupants of two wheeler in the present study (55.55%) followed by pedestrians (30.76%) and least in occupants of four wheeler (13.69%).

Maximum number of victims of head injury were observed in two wheeler vehicle, among them driver of two wheeler vehicle shows head injury in 44 cases (54.32%), while driver of four wheeler

vehicle shows head injury in only 4 cases (04.93%) in our study.

TABLE 4: Distribution according to type of victims

Sr. No.	Type of Victim	No. of Cases	Percentage (%)
1	Pedestrians	36	30.76%
2	Two wheeler occupants	65	55.55%
3	Four wheeler occupants	16	13.69%
	Total	117	100.0%

Relatively fewer incidences of head injury were observed in four wheeler passenger and that is in 12 cases (14.82%) in our study.

Table 5: Distribution According To Type Of Vehicle

Vehicle Type	Type of occupants of vehicle		No. of Cases and % of Cases
	Driver	Passenger	
Two wheeler	44 (54.32%)	21 (25.93%)	65 (80.25%)
Four wheeler	4 (04.93%)	12 (14.82%)	16 (19.75%)
Total	48 (59.25%)	33 (40.75%)	81 (100.0%)

TABLE 6: Distribution according to protection used by the occupants of vehicle like helmet worn (HW) / helmet not worn (HNW) and seat belt applied (SBA) / seat belt not applied (SBNA)

Vehicles	Protection by the occupants		No. of Cases and % of Cases
	HW/SBA	HNW/SBNA	
Two wheeler	3 (1.70%)	62 (35.23%)	65 (36.93%)
Four wheeler	00 (00.00%)	16 (09.09%)	16 (9.09%)

Maximum numbers of victims of head injury in RTA were observed in two wheeler vehicle and in them 62 victims (35.23%) were without helmet for the protection, while only 3 victims (2.27%) in which

person were worn helmet. Victims of head injury in four wheeler vehicle were 16 victims (09.09%) and they were not applied seat belt in our study.

Linear fracture of the skull was observed in maximum numbers and that is 43 cases (36.75%). Relatively fewer incidences of depressed fracture of skull were observed and that is 17 cases (14.52%) in our study.

TABLE 7: Distribution According To Type Of Skull Fracture Due To Road Traffic Accident

Sr. No.	Fracture Type	No. of Cases	% of Cases
1	Linear	43	36.75%
2	Comminuted	22	18.80%
3	Depressed	17	14.52%
4	Mixed (more than 1)	29	24.81%
5	No-Skull fracture	06	05.12%
	Total	117	100.0%

Table 8: Distribution According To Site Of Skull Fracture Due To Road Traffic Accident

Sr. No.	Site of Skull Fracture	No. of Cases	% of Cases
1	Frontal	19	16.23%
2	Parietal	31	26.49%
3	Temporal	10	08.59%
4	Occipital	08	06.83%
5	Base of skull	04	03.41%
6	Mixed (more than 1)	39	33.33%
7	No-Skull fracture	06	05.12%
	Total	117	100.0%

TABLE 9: Distribution According To Type Of Intracranial Haemorrhage Due To Road Traffic Accident

Sr. No.	Intracranial Haemorrhage Type (ICH)	No. of Cases	% of Cases
1	Extradural Haemorrhage(EDH)	27	23.07%
2	Subdural Haemorrhage(SDH)	43	36.75%
3	Subarachnoid Haemorrhage(SAH)	17	14.55%
4	Intracerebral Haemorrhage(ICBH)	01	00.85%
5	Intraventricular Haemorrhage (IVH)	00	00.00%
6	Mixed type	29	24.78%
	Total	117	100.0%

According to the site, maximum numbers of skull fracture observed were of mixed type and that is all over the skull or involving more than one part of the skull which were found in 39 cases (33.33%) followed by parietal part (26.49%) in our study.

Maximum numbers of ICH was observed is SDH (36.75%). Relatively fewer cases of ICBH were observed and that is only in 1 case (00.85%) in our study.

DISCUSSION: Head injury is still the major cause of death in RTA cases. The reason behind this may be urbanization, more industrial growth as well as population growth and increasing number of vehicles. This factors cause tremendous overcrowding of vehicles on roads which eventually leads to more accidents.

In the present study males are largely involved in the accidents with male to female ratio is nearby 8:2, because males are more mobile due to going out for work and so more prone to RTA. This occurrence is seen in other study also.^{3,4,9}

In our study 21-30 years age group were the most common and 61-70 years and above 70 years age group were the least common age group involved in RTA. This corresponds with other studies^{4,6,8} This age group mainly consists of working people and students, who usually travelled by their own vehicles or other public transportation. This leads to involvement of this age group more commonly in RTA.

In our study most of the RTA have occurred in afternoon hours (12.01 P.M. – 6.00 P.M.) followed by morning hours (6.01 A.M. – 12.00 noon). It may be due to heavy traffic during these peak hours.

Vehicular occupants were more involved in RTA than pedestrians in our study. This corresponds with other studies.^{7,9} It is due to reckless driving of vehicles on the roads. Some of the studies also showed the more involvement of pedestrians than vehicular occupants.^{5,6,7}

In our study occupants of two wheeler vehicles were more involved in RTA than occupants of four

wheeler vehicles. It is due to increasing trend of driving two wheelers by college students, who have tendency to drive fast.

In our study majority of the occupants were not using protective measures like helmet and seat belt while riding or driving at the time of RTA, which suggested that use of the helmet and seat belt can be life saving measure during RTA.

In our study most common type of skull fracture due to head injury in RTA was linear fracture and most common site of skull fracture was mixed (more than one part of the skull), which is followed by parietal part.

In our study most common type of intracranial haemorrhage due to head injury in RTA was subdural haemorrhage. This corresponds with other studies.³ That is followed by mixed type of haemorrhage.

CONCLUSION: From the present study, following conclusions were derived regarding road traffic accidents: Males are more commonly involved in RTA. Young adults between 21 - 30 years are more vulnerable to RTA. Accidents are more during afternoon hours (12.01 P.M. – 06.00 P.M.) and morning hours (06.01 A.M. - 12.00 noon). Fatalities are more in two-wheeler occupants. Victims of two wheeler and four wheeler occupants were not using protective measures like helmet and seat belt. Fatal head injuries are commonly associated with skull fractures. Subdural haemorrhage is the commonest intracranial haemorrhage seen in RTA. The rate of incidence is higher in India because of its traffic patterns and possibly the lack of preventive measures such as helmets in motor cyclists and seatbelts in automobiles and poorly controlled traffic conditions and poor road conditions. It is necessary to do much more studies on RTAs and strict implementation of the already existing rules.

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