Research Paper

Volume : 4 | Issue : 5 | May 2015 • ISSN No 2277 - 8179

Demographic Profile of Head Injury Victims Died in Road Traffic Accidents in Urban Region of Maharashtra.

Medical Science

KEYWORDS : Road traffic Accidents, Head injury, demographic profile

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ABSTRACT

Road traffic accidents are one of the major causes of death the world over, head injury being the commonest cause of mortality in road traffic accidents. The incidence of road accidents is the highest in India as compared to other countries. Despite improved trauma care facilities, there has been a steady rise in casualties due to road accidents in the country and their ratio of the total deaths due to all accidents has also increased considerably in the recent past. The present study was undertaken on 404 victims of road traffic accidents succumbing to head injury brought to our postmortem centre for medicolegal autopsy. The main purpose of our study was to find out the demographic profile of the victims involved in road traffic accidents and to provide epidemiological data in order that suitable preventive measures can be taken.

Introduction:

One of man's most instinctive urges is to transport his person and his goods from place to place. The Sumerians improved upon the wheel by using it as a means of transportation on their chariots. Later, ancient Egyptians also used wheeled chariots. Credit is given to the ancient Mesopotamian culture of Sumer in about 3200 B.C. (1) Speedy road traffic and changing social patterns contributed to increase in the incidence of trauma to the human body. The incidence of head injury resulting in trauma to the brain is about 20-40 cases per 100000 population per year. It is the commonest cause of death in young adults (age 15-24 years) and males more often than not outnumber females. [(2)] Understanding transportation needs, patterns and modes is vital to ensure road safety. The main purpose of this study was to collect & correlate the factors such as age, sex, time of incidents, seasonal variations, economic status wise distribution, condition of roads, type of vehicle involved etc.

Material and Methods:

The current study is a one year cross sectional study of the medicolegal autopsies conducted from January 1, 2006 to December 31, 2007.

Study subjects:

The study included all the 404 victims of head injury in various road traffic accidents autopsied in the department of Forensic Medicine and Toxicology of K.E.M Hospital, Mumbai.

who had died in the institute while getting the treatment or who were brought dead to the casualty department and also dead bodies brought by the investigating agencies.

Collection of data:

All the cases of road traffic accidents which show multiple injuries to the body including head injuries have been considered for the present study. A thorough perusal of case papers including investigation, medico-legal registers and police records like panchanama was carried out to collect relevant information. A detailed history related to time, manner and hospitalization was obtained from relatives. Proforma specially designed for this purpose was used for collection of data.

Observation and Results:

Table 1: Age and sex wise distribution

Age group	Male (%)	Female (%)	Total (%)
0-10	12 (03.0)	02 (0.5)	14 (3.5)
11-20	20 (05.0)	00 (0.00)	20 (5)
21-30	102 (25.2)	14 (03.5)	116 (28.7)
31-40	106 (26.2)	06 (1.55)	112 (27.7)
41-50	120 (14.9)	12 (1.5)	66 (16.3)
51-60	32 (07.9)	06 (1.5)	38 (9.4)
>60	34 (08.4)	04 (1.0)	38 (9.4)
Total	366 (90.6)	38 (9.4)	404 (100)

The table No 1.clearly demonstrates the male preponderance (90.6%) of head injury in all age groups in fatal road traffic accidents.

The peak incidence was observed in the age group 21-30 years comprising 28.7% of the cases. It was also observed that 27.7% belonged to the age group 31-40 years. Thus 56.4% of cases comprised age group of 21-40 years in the study. The male to female ratio in the study was 9.63:1 (Male=366, Female=38).

Table 2: Season wise distribution

Season	Cases	Percentage
Summer	174	43.1
Rainy	120	29.7
Winter	110	27.2
Total	404	100

Table No 2. Clearly demonstrates that the largest number of the accidents took place during the summer months (43.1%) which could be attributed to the fact that this is the season for marriages as also the vacation months eventuated by increase movement of people from one place to another through travel by road.

Table3 : Area wise distribution

Area	Cases	Percentage
Semiurban	94	23.3
Urban	310	76.7
Total	404	100

According to table No 3. The majority of victims are from urban areas 76.7% whereas semiurban population involved only 23.3% of cases.

Table 4: Distribution on the basis of time of incidence

Time of incidence	Cases	Male	Females	Percentage
00.01am-03.00am	14	12	2	3.46
03.01am-06.00am	6	6	0	1.48
06.01am-09.00am	22	22	0	5.44
09.01am-12.00pm	58	46	12	14.35
12.01pm-03.00pm	44	32	12	10.89
03.01pm-06.00pm	58	52	6	14.35
06.01pm-09.00pm	122	116	6	30.19
09.01pm-12.00am	80	80	0	19.80
Total	404	366	38	100

As per table 4, the maximum number of road traffic accidents involving head injuries were sustained between 6 pm to 9 pm (the peak hours of return journey) Thus maximum number of cases are seen during night hours between 6 pm to12 midnight whereas least number of cases are seen between 3 am to 6 am..

Table 5: Distribution on the basis of economic status

Socioeconomic Status	Cases	Percentage
Upper Class	28	6.9
Middle Class	168	41.6
Lower Class	82	20.3
Dependant	126	31.2
Total	404	100

Table No 5. depicts that maximum victims 41.6% belong to middle class of socioeconomic status, followed by dependent class i.e. children and housewives, 20.3% victims belong to lower socioeconomic strata. Least involved victims are from upper class of socioeconomic status.

Table 6: Distribution on basis of educational status

Education Level	Cases	Percentage
Not Applicable	6	1.5
Illiterate	68	16.8
Primary	38	9.4
Middle School	28	6.9
High School	62	15.3
Diploma	42	10.4
Graduate	144	35.6
Post Graduate	16	4
Total	404	100

According to table No 6, 404 victims (35.6%) were graduates.

Table 7 : Distribution of victims of fatal road traffic accidents involving head injury according to type of road user (Deceased)

Type of Road User	No of Cases	Total(%)
Pedestrian	120	29.7
Driver	212	52.5
Passenger	72	17.8
Total	404	100

From table No 7, in the present study, about half the victims (52.5%) were drivers followed by pedestrians (29.7%) and finally passengers (17.8%).

Table 8 : Distribution on the basis of condition of road

Condition of road	Cases	Percentage
Good	262	64.9
Bad	88	21.8
Under construction	46	11.4
Not applicable	08	2
Total	404	100

The above table shows the role played by road factors in fatal road traffic accidents. Maximum number of deaths was on good roads [262 cases (64.9%)], followed by bad roads [88 (21.8%)]. Under construction roads constituted 46 cases (11.4%).\

Discussion:

Age and sex wise distribution of victims:

As per Table 1, in present study, age of the victims varied from 1-90 years. The peak incidence was observed in the age group 21-30 years comprising 28.7% of the cases, 27.7% belonged to the age group 31-40 years with 56.4% of cases comprising age group 21-40 years. Individuals in the age group 0 to 10 years were the least affected (3.5%), followed by older people i.e. 60 years and above in 9.4% of total cases. The male to female ratio in the study was 11.15:1 (Male=366, Female=38). Male to female ratio in the most commonly affected age group 21-30 years was 7.28:1. Amongst female victims the highest number [14 (3.5%)] of deaths were observed in age group 21-30 years.

This was due to the fact that this is one of the active periods of life in males who work outdoors and therefore are most commonly exposed to traffic accidents

This study is in accordance with studies done by Eke N. (3) et al, Menon A. (4), Sharma B. (5) et al, Shinde J. (6) et al, Dandona R. (7) et al in contrast with studies done by Kamdar B. (5) et al.

The present study has obvious finding of male predominance. The highest number

[66 (51.4%)] of the male victims are in the 21-40 years age group, most of whom must have been the sole breadwinner of their families, bringing to light the socio-economic problems that confront the dependents of the victims. As this study has been conducted in semiurban areas, where there is presence of orthodox socio-cultural background and the lack of exposure to the traffic environment, it leads to poor sense of traffic safety rules prevalent in females.

Season wise variation:

According to table 2, largest number of the accidents took place during summer months followed by monsoon.

The present study is in accordance with studies of Adhya S. (8) et al and in contrast to studies of Eke N. (3) et al,

Region wise distribution

As per table 4, majority of the victims are from urban areas [76.7%] whereas semiurban population is involved in 23.3% of cases. Traffic rules are not followed by majority of urban population. Thus more awareness and strict implementation of traffic rules is required in these regions. Kumar D (9) et al found that majority of victims belonged to urban areas [128 cases (76.20%)] compared to rural areas. Involvement of surrounding urban areas as compared to semiurban population was more in my study and in accordance with study of Kumar D (9) et.al.

Time of incidents:

According to table 5, most of the incidents of road traffic accidents occurred between 6 pm to 9 pm comprising 30.19% of total cases and a large percentage of cases 49.99% occurred between 6 pm to 12 midnight, followed by 25.24% between 9 am to 3 pm. The least number of incidents occurred between 3am to 6am comprising 1.48% of the total cases. Congestion is more on the roads as everyone is in a hurry to return back home from jobs during evening periods and lighting conditions are poor on most of the roads on the outskirts of city as well as surrounding suburban and rural areas.

Singh H (10), et al observed that maximum cases occurs between 8-10 am (14.9%) followed closely by 6-8 pm (24.7%) and 12 noon -2 pm (13.1 %) respectively.

Singh Y (11) et al observed that incidence of road traffic accident were maximum from 6 am to 12 noon (33.7%) followed by 6 pm to 12 midnight (28.36%) and 12 noon to 6 pm (28.09%).

Distribution on the basis of economic status

Table 6 depicts that maximum number of victims (41.6%) belong to the middle class socioeconomic status followed by dependent class i.e. children and housewives (20.3%) victims belong to lower socioeconomic status. Least involved victims are from affluent class socioeconomic status.

Kumar D (9) et al found that 120 victims were able to be studied for socio-economic status; more belonged to middle (53.4%) than lower (28.3%) and higher (18.3%) status. Rest could not be studied as victims were unknown.

The study of Kumar D(9) et al is in accordance with present study.

Distribution on the basis of educational status:
Among victims (35.6%) had been graduated or were studying graduation. Next 16.8% victims were illiterate were among 2nd most common category.15.3% , 10.4% , 9.4% , 6.9% , 4% victims were studying high school , diploma , primary, middle school, postgraduate education respectively. The victims with and studying higher education included in graduate class shows major peak, as frequent use of motorized two wheelers by this class may be the attributable factor in educated population. Also this class is always in hurry either to attend their jobs or educational classes and henceforth more prone for accidents as traffic exposure is more that too in rush hours

Distribution on the basis of condition of road:
Table 8 shows the relation of road factors with fatal road traffic accident. Maximum number of deaths was on roads which were in good condition (64.9%), followed by those in bad condition (21.8%). Under construction roads constituted 11.4%. This shows that in majority of cases, carelessness and speed of vehicle might be major factor involved.

Kumar D et al (9): Accident on pucca (94.9%) found to be significantly higher ($p < 0.05$) than kuccha road (5.1%).

Present study is partly in accordance with study of Kumar D et al (9).

SUMMARY AND CONCLUSIONS:
Distribution and causes of head injury are more or less similar to the pattern found in most of other studies. The accidents occur most commonly in age group of 20-40years with male predominance . Most of the incidents occurred between 6 pm to 9 pm and almost half of the incidents occurred between 6 pm to 12 mid night. Largest number of accidents took place during the summer months. Middle class graduated or were studying graduation were most common victims of fatal road traffic accidents. Drivers involvement was the hallmark of all road traffic accidents, followed by pedestrian and passengers. Motorized two wheelers were most commonly involved with neither driver nor pillion-rider of motorized two wheelers wearing helmets.

The incidence is higher in India because of its traffic patterns and their demographic profile 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.

RECOMMENDATIONS
Keeping in view the results of the study, the mortality in road traffic accident victims can be reduced with following recommendations:

Safety education and law enforcement:
- Safety education must begin with school children.
- Mass media can also be utilized in this regard.
- Good enforcement of law is an integral part of road safety; legislation embodies codified set of rules. These are enforced by state to prevent accidents.
- Setting an enforcing speed limit and strictly implementing it.
- Increasing wearing of helmets through the enforcement of law as their use is important especially in our country where riding of two wheelers is common and current level of helmet wearing is low. Helmets should be properly ventilated and should be designed as per comfort of occupants so that its utilization will increase.

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