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Profile of Death due to Road Traffic Accidents Brought to Rajendra Institute of Medical Sciences, Ranchi from 2013-14

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Abstract: *Road Traffic Accidents (RTAs) are one the leading causes of morbidity and mortality in the world. Accident in general is a sudden, unplanned, unfortunate mishap or unexpected, unintentional event resulting from carelessness, unawareness, ignorance or a combination of factors and causing injury or loss, a decrease in value of the resources, or an increase in disabilities. It is estimated that 10 millions motor vehicle crashes occur annually in the world. 16 persons die every hour from RTAs in our country. In India, road accidents have been proved to be 1892 times more dangerous than the terrorism. Very few studies have been carried out in Ranchi region. Therefore, the present was undertaken to study the pattern of Road Traffic Accidents (RTAs), to draw public attention, awareness towards road safety and prevention of mortality from accidents .*

Keywords: *morbidity, mortality, road traffic accident.*

I. Introduction

The term 'ACCIDENT' has been defined as an occurrence in the sequence of events which usually produces unintended injury, death or property damage [1]. It is also defined as "an unexpected, unplanned occurrence which may involve injury" [2]. Ms Mary Ward was the first documented victim of automobile accident that took place in Britain on August 31, 1869 [3]. Since then, the global road traffic fatalities count has raised to about 1.25 million/year [4]. Not every case of RTA is registered. Among all types of RTAs, those caused by the motor vehicles claims the largest toll of life and tend to be most serious. Around 90% of the world's fatalities on the roads occur in low-income (16%) and middle income (74%) countries, which have only 54%, of worlds registered vehicles [4]. RTAs usually met by human errors including ignorance, overtaking, rash & negligence driving, use of mobile phones while driving, least knowledge about traffic rules, defective roads, poor maintenance of vehicles, improper light and diminished visibility due to certain atmospheric conditions. Violation of the traffic rules plays the major role here; therefore, highlighting the strict implementation of the road safety measures [5]. Road accidents constitute a modern day epidemic calling for control and prevention of accidents, which are no longer considered accidental events.

II. Materials And Methods

The present study was conducted in the Department of Forensic Medicine and Toxicology, Rajendra Institute of Medical Sciences, Ranchi from October 2013 to November 2014. During this period, total 2852 medicolegal autopsies were conducted out of which 100 Autopsy cases of RTA were studied. Unknown cases of RTA were excluded from the study.The relatives of the victims of the accidents and accompanying police were interviewed to obtain the information about the circumstances leading to death.

III. Observations

In our study, total 100 cases were selected out of which 89 were males and 11 were females. Cases were divided into various age groups [TABLE 1]. Highest fatality (36%) was found in 21 to 30 age group while lowest (1%) in 0 to 10 age group [TABLE 1]. Sex wise, maximum (35%) numbers of male victims were from 21 to 30 age group, while maximum (4%) females were from 41 to 50 age group [TABLE 1].

Table 1: age and sex wise distribution

Age group(yrs)	Male (%)	Female (%)	Total
0-10	0 (0%)	1 (1%)	1 (1%)
11-20	12 (12%)	2 (2%)	14 (14%)
21-30	35 (35%)	1 (1%)	36 (36%)
31-40	13 (13%)	2 (2%)	15 (15%)
41-50	12 (12%)	4 (4%)	16 (16%)
51-60	7 (7%)	1 (1%)	8 (8%)
>60	10 (10%)	0 (0%)	10 (10%)
Total	89 (89%)	11 (11%)	100 (100%)

Highest (39%) mortality was recorded in the rainy season, but occurrence in other seasons (summer-34%, winter-27%) is also not very uncommon [TABLE 2]. In short, we can say that RTAs are uniform throughout the year.

Table 2: season wise distribution

Season	Cases	Percentage
Summer (march-june)	34	34
Rainy (july-oct)	39	39
Winter (nov-feb)	27	27
Total	100	100

The intracranial bleeding was observed in 73% out of which subdural haemorrhage was observed in 63%. Notably, there was no intracranial haemorrhage in 27% of cases [TABLE 3].

Table 3: Various types of intracranial haemorrhage

Haemorrhage	Cases	Percentage
Extradural alone	4	4
Subdural alone	63	63
Subarachnoid alone	0	0
Intracerebral alone	2	2
Extradural and subdural	1	1
Subdural and intracerebral	0	0
Subdural and subarachnoid	0	0
Crush	3	3
No intracranial haemorrhage	27	27
Total	100	100

The rupture of lungs (26%) is mostly associated with cranio-cerebral injuries, while fracture of ribs (23%) and fracture of lower limbs (21%) are also common [TABLE 4].

Table 4: Major Injuries of Different Organs in Association with Cranio-Cerebral Injuries

Organs involved	Cases
Rupture of lungs	26
Rupture of liver	17
Rupture of spleen	12
Rupture of kidney	0
Rupture of G.I.T.	1
Rupture of heart	3
Fracture of pelvis	6
Fracture of lower limbs	21
Fracture ribs	23
Fracture sternum	6
Fracture facial bones	3
Fracture of vertebra	1
Fracture of upper limbs	7
Fracture clavicle	3

According to the cause of death majority of the cases (49%) died of head injury followed by shock and haemorrhage (40%) due to polytrauma [TABLE 5].

Table 5: According to the Cause of Death

Cause of death	Cases	Percentage
Head injury	49	49
Shock + haemorrhage due to polytrauma	40	40
Chest injury	9	9
Abdominal injury	1	1
Septicemic shock	1	1
Total	100	100

Regarding the period of survival, 84% cases died by 24 hours after the injury and were able to obtain only minor surgical aid or hospital observation. Only 19% of the victims died after 24 hours of the injury receiving definitive surgical treatment [TABLE 6].

Table 6: According to the Period of Survival

Period of survival	Cases	Percentage
0-6 hrs	4	4
6-12 hrs	24	24
12-24 hrs	56	56
>24 hrs	16	16
Total	100	100

Table 7: Comparison of the Causes of Death

Cause Of Death	Study Author			
	Lau [13]	Biswas [12]	Ghangale [14]	Present study
Head injury	41.8%	47.3%	35.5%	49%
Shock + haemorrhage due to polytrauma	49%	41.8%	46.6%	40%
Chest injury	21.1%	0%	11.1%	9%
Abdominal injury	2.6%	0%	0%	1%
Others	1.1%	5.5%	0%	1%

IV. Discussion

Our study shows that the sex wise distribution of incidence of RTAs is of male preponderance. Out of 100 cases of death from road traffic observed in the present study, there were 89 males and 11 females [TABLE 1]. This prevalence of males over females has also been recorded by various authors [6, 7, 8]. This can be explained as that in our society, males are usually bread-earners and go outdoors for the living. They are more exposed to the vehicular accidents while females mostly remain indoors.

The highest fatality (35%) has occurred in the age group 21-30 years and lowest in age group 0-10 years [TABLE 1]. This finding is consistent with other studies [6, 9, 10]. The people of young age (21 to 30 years) are mostly exposed to accidents in the form of drivers of light motor vehicle [TABLE 1]. They usually have a craze for the speed while driving and a disregard for the traffic rules.

In our study, season seems do not have any influence over the incidence of fatal injuries in vehicular accidents. Having only minor difference, the highest number (39%) of cases have been found to be in the Rainy season followed by summer (34%) and then in winter season (27%) [TABLE 2]. Actually rainy season make more unfavorable for driving because it reduces the friction between tyre and road and it also decreases visibility. This is consistent with the study of Ravikiran et al [11]. However, the study of Biswas G et al shows higher incidence in summer [12].The notable point of our study was that 27% of cases do not have intracranial haemorrhage while only 63% of the victims had intracranial haemorrhage [TABLE 3]. This is in contrast with the observation of Singh H et al who observed that head injury alone was fatal in 73 (56%) cases [10].

In our study, majority of cases (49%) died of head injury followed by shock and haemorrhage (40%) [TABLE 4].Majority of victims (84%) died within 24 hours of accident while only 16% cases survived more than 24 hours [TABLE 5].Chest injuries including rupture of lungs (26%), fracture of ribs (23%) are associated with cranio-cerebral injuries in the highest number of cases. They were followed by fracture of lower limbs (21%), rupture of liver (17%) and rupture of spleen (12%) [TABLE 6].

V. Conclusion

Since the first automobile accident, the number and speed of running vehicles have enormously increased. This has led to the manifold increase in RTAs.In our study, young age group of male predominance is the mostly affected. This gives the emphasis of traffic rules to be strictly followed. The rash and negligent driving are also to be checked. The finding that majority of victims died within 24 hours of accidents that gives emphasis on the need of facility-based traumatic management infrastructure.Therefore, strict compliance with road safety rules, improvement of roads, rapid emergency services & establishment of trauma care centers are essential to reduce the incidents.

VI. Suggestions

The following changes in road infrastructure and policy reforms are suggested:

- The State should have a zero tolerance policy for violation of traffic rules and drunken driving.
- Educating the public regarding traffic rules and lifesaving first aid skills should be done regularly by expert lectures, media and also by including it in teaching curriculum for schools and colleges. Adequate training in first aid methods should also be given before issuing driving licenses.
- Sidewalks for pedestrians should be made available in all rural and urban roads.
- Separation of slow and fast moving vehicles by assigning different roads / lanes.
- The roads should be properly maintained, well illuminated at night and cleared from stray animals.

Strict enforcement of wearing of helmets should be done for motorized and non-motorized two wheelers.

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