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A retrospective study: Pattern of injuries in road traffic accident cases autopsied at tertiary care centre in Belagavi, Karnataka

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Abstract: *Background:* There were 1.25 million road traffic deaths globally in 2013. Between 20 & 50 million more people suffer non-fatal injuries with many incurring a disability because of their injury. India has the worst road traffic accidents rate worldwide. *Objectives:* To assess the pattern of injuries in road traffic accident cases autopsied at Tertiary Care Centre in Belagavi. *Method:* It is a retrospective study of medico legal autopsy cases conducted at Jawaharlal Nehru Medical College & KLE'S Dr Prabhakar Kore Hospital, Belagavi, from January 2015 to December 2017. *Results:* During the 3 years study period a total of 326 fatal road traffic accident cases were autopsied in the mortuary of KLE'S Dr Prabhakar Kore Hospital and Research Centre. Among the age group 21-30 years, highest number of road traffic fatalities occurred with 128 cases (39%). Males predominated over the females (76%), rural residents were more as compared to urban residents with (65%), Maximum number of cases were those of head injury with (79%) followed by abdominal injuries with (11.4%) and chest injuries with (9.5%). Maximum number of cases were riders of 2 wheelers with (75%) followed by pillion rider with (24.3%). Majority of cases were recorded in the period between July to September with (34%). *Conclusion:* Road traffic accidents are one of the most important vehicular accidents involving motorcycle. Our study aims to find out the epidemiological factors, risk factors, use of safety measures and in compliance with traffic rules and regulations.

Keywords: Fatal RTA, Pattern of injuries, Diurnal variation, Road traffic, Accident.

Introduction

An accident has been defined as "an unexpected, unplanned occurrence which may involve injury" [1]. Accidents, tragically are not often due to ignorance, but are due to carelessness, thoughtlessness and over confidence. Most common cause of accidental deaths are road traffic accidents.

There were 1.25 million road traffic deaths globally in 2013. Between 20 & 50 million more people suffer non-fatal injuries with many incurring a disability because of their injury [2]. Road traffic accidents in India have crossed over 1,30,000 deaths yearly and have overtaken China. India has the worst road traffic accidents rate worldwide [3].

Road traffic accidents (RTAs) have been a significant public health concern since the inception of motor vehicles. The earliest recorded fatal road accident occurred in Great Britain in 1896, followed by the first documented fatality in the United States in 1899. Despite advancements in vehicle safety and traffic regulations, RTAs remain one of the leading causes of death worldwide.

According to the World Health Organization (WHO), an estimated 1.25 million deaths were caused by road traffic injuries globally in 2010, equating to one death every 25 seconds [4]. Although high-income countries have seen a decrease in fatalities due to traffic accidents, low and middle-income countries (LMICs) have experienced an alarming

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increase. This disparity highlights the global inequity in road safety measures and accident prevention strategies [5]. In 2008, road traffic injuries ranked fourth among the leading causes of death worldwide. RTAs not only result in mortality but also impose a substantial economic burden on countries, costing 1-3% of their gross domestic product (GDP) [6].

Road traffic accidents are increasing at an alarming rate throughout the world. Rapid growth of transportation system, industrialization, urbanization and increase in population is responsible for the 'veritable epidemic' Inadequate traffic planning and lack of traffic sense have worsened the situation particularly in the developing countries. Projected estimations reveal that fatalities due to RTA will increase by 66% over the next 20 years and will be the 3rd leading cause of death by 2020 moving from its present 9th position [7].

First automobile accident had occurred in 1896, when a bicycle rider was hit by a car and first fatal accident occurred in London in the year 1899, in same year when a pedestrian was killed by a car in New York City. The important factors are human errors, driver fatigue, poor traffic sense, mechanical faults of vehicle, speeding and overtaking violation of traffic rules, poor road conditions, traffic congestion, road encroachment and drunken driving etc [8].

In 2001 an estimated 1.26 million people died due to road traffic accidents worldwide, 90% of them in low- and middle-income countries. Mortality rate was 20.8 per 100,000 population. The aim of the present study is to know the pattern of fatal road traffic accidents autopsied at a tertiary care center.

Material and Methods

The present study is a retrospective study of medico legal autopsies conducted at Jawaharlal Nehru Medical College & KLE'S Dr Prabhakar Kore Hospital, Belagavi, Karnataka India from January 2015 to December 2017. Detailed information regarding the circumstances of death was sought from Police officer. Data was compiled and analyzed as per age, sex, marital status, religion, calendar month, residence, causes of death & manner of death. These cases were from various police stations of Belagavi districts.

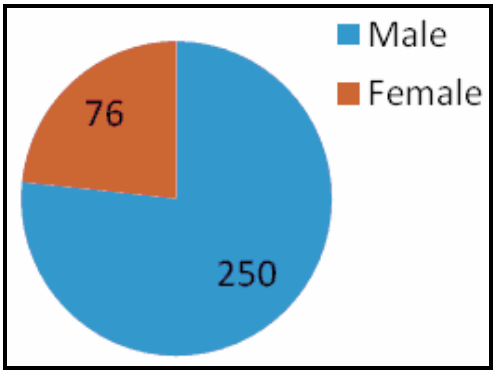
Results

A total no of 581 cases were autopsied in which 326 cases were fatal road traffic accidents at the mortuary of KLE'S Dr Prabhakar Kore Hospital and Research Centre, Belagavi, Karnataka. Age group between 21-30 years were in highest number with 39% followed by 31-40 years with 32.5%. Least number of cases were seen in age group more than 70 with 1.5% (Table-1).

Table-1: Age wise distribution of cases

Age group	No of cases	%
0-10	10	3.06
11-20	15	4.6
21-30	128	39.2
31-40	106	32.5
41-50	40	12.3
51-60	11	3.4
61-70	11	3.4
>70	5	1.5
Total	326	100

Fig-1: Sex wise distribution of cases



Majority of the victims in the present study were males with 250 cases (76.6%) as compared to females with 76 cases (23.4%) as shown in fig 1. Males predominated over females in the ratio of 3.2:1.

Table-2: Month wise distribution of cases

Month	No of cases	%
Jan-Mar	66	20.2
Apr-Jun	78	23.9
Jul-Sep	111	34.2
Oct-Dec	71	21.7
Total	326	100

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Most of the accidents occurred between July to September with 111 cases (34%), followed by April to June with 78 cases (23.9%) as shown in Table 2.

Table-3: Vehicle wise distribution of cases		
Type	**No of cases**	**%**
2-Wheeler	243	74.5
4-Wheeler	67	20.5
Heavy Vehicle	4	1.3
Others	12	3.7
Total	326	100

Majority of cases were 2-wheeler occupants with 243 cases (74.5%), followed by 4-wheelers with 67 cases (20.5%) and the least were heavy vehicle occupants as shown in Table 5. Other cases including pedestrian were 12 in number with 3.7% as shown in table 3.

Table-4: Occupant wise distribution of cases		
2-Wheeler Occupant	**No of cases**	**%**
Rider	184	75.7
Pillion rider	59	24.3
Total	243	100

The maximum number of cases were riders of 2 wheelers with 184 cases (75.7%), followed by pillion riders with 59 cases (24.3%) as shown in table 4.

Most cases had head injury with 258 cases (79%) followed by abdominal injuries with 37 cases (11.4%) as shown in Table 5.

Among head injuries the majority were subarachnoid hemorrhages seen in 181 cases (70%), followed by subdural hemorrhage (16.7%) and extradural hemorrhage (13.2%) as shown in Table 5.

Next common was abdominal injuries with 37 cases (11.3%) with injuries to the liver seen in 25 cases (67.6%) followed by injuries to the kidney seen in 7 cases (18.9%) as shown in Table 5.

Next common was chest injuries with 31 cases (9.5%) where injuries to the lungs are seen in 25 cases (80.7%) followed by injuries to the heart with 6 cases (19.3%) as shown in Table 5.

Table-5: Distribution of cases based on injuries sustained				
Pattern of injury	**Head Injury**	**No of cases**	**%**	**%**
Head injury	EDH	34	13.2	79.1
	SDH	43	16.7	
	SAH	181	70.1	
	Total	258	100	
Chest injury	**Chest Injury**	**No of cases**	**%**	9.5
	Lungs	25	80.7	
	Heart	06	19.3	
	Total	31	100	
Abdomen injury	**Abdomen injury**	**No of cases**	**%**	11.4
	Liver	25	67.6	
	Spleen	05	13.5	
	Kidney	07	18.9	
	Total	37	100	
Total		326		100

Discussion

Every day as many as 140,000 people are injured on the world's roads. More than 3,000 died and some 15,000 were disabled for life. Each of those people has a network of family, friends, neighbors, colleagues or classmates who were also affected, emotionally and otherwise.

In a study by K Suresh, and et al [9], Out of 161 medico-legal autopsied conducted, 52 cases were of RTAs and common age group was between 31-40 years with male predominance. This is similar to our study findings & also the findings done by Singh B et al [10] where majority of victims were young adults. A study by Singh et al [10] supports this, showing that men are more susceptible in risky driving behaviors due to alcohol consumption. Motor cyclists mostly sustained fractures followed by abrasions and equal number of contusion and laceration. In pedestrian 23% fractures and laceration in equal frequency followed by contusion 21.15% and abrasion 15.38%, fracture dislocation 11.46% respectively [9].

In a similar study conducted at Manipal by V Palimar and et al [10], the majority (57%) of

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victims were young adults (11-40 years), followed by people with ages of 41-60years (29%). In a study at Allahabad, the principal age group involved in fatal RTA was 25-44 years, with cases of 33.68%. In a similar study by K Vishal, Mugadlimath AB and et al [11], Out of 1300 medico-legal autopsies conducted during January 2011 to December 2015, 642 cases were of RTAs and common age group was between 21-30 years with male predominance. The maximum fatalities were the occupants of the vehicle (68%) and pedestrians being next (31.7%). Majority of the road traffic fatalities were due to head injury (61%) followed by abdominal injuries (22%), the next common being gross musculoskeletal injuries (10%) and thoracic injuries (7%) [11].

Our study findings are in contrast with the findings by K Vishal, Mugadlimath AB et al [11] where in maximum number of Intracranial hemorrhages were due to Subarachnoid hemorrhage (70%) followed by Subdural Hemorrhage (43%). This is similar to our study findings where maximum road traffic fatalities were due to head injury followed by abdominal injury. Similar findings were observed in the study done by Farooqui et al and Prakash et al [12-13].

In our study light vehicles, especially 2 wheelers, were commonly involved in road traffic accidents (74%) followed by 4-wheeler vehicles (67%) and heavy vehicles (1.3%). Our study findings are like study by Swarnkar et al [14], Sonawane et al [15] and Rakshitha Bm et al [16]. Our study coincides with the study done by Marak F et al [17], where males predominated females. And our study findings are in contrast with the findings by Marak F et al [17] where maximum fatalities occur in the month of October.

Our study findings are in contrast with the study done by Srivastava R et al [18] where maximum number of injuries are of thoraco-abdominal involvement. Our findings are in similarity with the study done by Srivastava R et al [18] where maximum number of head injury fatalities were due to subarachnoid haemorrhage, followed by subdural haemorrhage and extradural haemorrhages.

Conclusion

In our study conducted at J.N Medical College, Belagavi to know the pattern of injuries in road traffic accidents cases autopsied at Tertiary Care Centre in Belagavi, during a period of 3 years from January 2015 to December 2017. A total cases comprising of 581 medico legal autopsies were conducted out of which 326 cases of fatal road traffic accidents were included in the study. In our study majority were males as compared to females, rural residents were more as compared to urban residents, Hindus were majority in number as compared to Muslims and other castes forming bulk of cases. Maximum number of cases were those of head injury as compared to chest and abdominal injuries. Majority of cases were recorded in the period between July to September.

These findings stress the need for improved road safety measures, strict traffic regulations and timely medical intervention to reduce the burden of Road Traffic Accident on public health. To reduce the incidence of road traffic accidents (RTAs), the following preventive measures can be implemented:

1. Enforcement of Traffic Laws
2. Road Infrastructure Improvements
3. Public Awareness and Education
4. Vehicle Safety Standards
5. Pedestrian and Cyclist Safety
6. Enhanced Emergency Response
7. Training and Licensing
8. Data-Driven Policies

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References

1. Health and Safety Executive, UK. Available at *http://www.hse.gov.uk.* Accessed on 2-6-2018.
2. WHO. Report. *http://www.who.int* Accessed on 2-6-2018
3. WHO. Global status report on road safety: time for action. *Geneva, World Health Organization,* 2009 Available from: *www.who.int/violence_injury_prevention/road_safety_status/2009*. Accessed on 2-6-2018

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4. World Health Organization. Global status report on road safety 2015. *Geneva: WHO Press;* 2015. Available from: *https://www.afro.who.int/sites/default/files/2017-06/9789241565066_eng.pdf*
5. Peden M, Scurfield R, Sleet D et al. World report on road traffic injury prevention. *Geneva: World Health Organization.* 2004.
6. National Crime Records Bureau (NCRB). Accidental deaths and suicides in India *Ministry of Home Affairs, Government of India*. 2010.
7. Road Traffic injury prevention in India. Government of India, World Health Organization India country office collaborative programme 2004-05.
8. Kaul A, Sinha US, Pathak YK, Singh A, Kapoor AK, Sharma S, Singh S. Fatal Road Traffic Accidents, Study of Distribution, Nature and Type of Injury. *JIAFM.* 2005; 27(2):71-75.
9. Suresh K, Sharma RB et al. Pattern of injuries in Road traffic accidents at Chitradurga Karnataka. *J. Indian Acad Forensic Med.* 2015; 37(2):173-175.
10. Singh B, Palimar V, Arun M, Mohanty MK. Profile of Trauma related Mortality at Manipal. *KUMJ*. 2008; 6(23):393-398.
11. Koulapur V, Mugadlimath AB, Ali K, Junaidi KA. Epidemiological Profile of Road Traffic Fatalities: A Retrospective Study of Autopsied Cases at Belagavi, Karnataka. *Journal of Indian Academy of Forensic Medicine*. 2018; 40(1):52-56.
12. Prakash MJ, Koulapur VV, Hounnugar RS, Bannur V, Jirli PS, Mohite T, et al. Profile and pattern of mortality from road traffic accident- a cross sectional study in tertiary care hospital, Belgaum. *Int J Dent Med Sci Res.* 2023; 5(2):835-840.
13. Farooqui JM, Chavan KD, Bangal RS, Syed MA, Thacker PJ, Alam S, et al. Pattern of injury in fatal road traffic accidents in a rural area of western Maharashtra, India. *Australas Med J.* 2013; 6(9):476.
14. Swarnkar M, Singh P, Dwivedi S. Pattern of trauma in central India: an epidemiological study with special reference to mode of injury. *Internet J Epidemiol.* 2009; 9(1):1-7.
15. Sonawane S, Jambure M. Patterns of head injuries in road traffic accidents- an autopsy study. *Int J Curr Res.* 2015; 7(12):23733-7.
16. Rakshitha BM, Chinmayi Y. An autopsy study of road traffic accident cases at tertiary care center. *Int J of Res in Medi Sci.* 2024; 12(1):153-158.
17. Marak F, Sangma MM, Kumar G, Priyadarshini M. Pattern of injuries associated with deaths following road traffic accidents as seen in a tertiary care hospital in Puducherry. *Indian J Forens Community Med.* 2016; 3(4):257-262.
18. Srivastava R, Khan I. Pattern of injuries in road traffic accidental cases, an autopsy-based study. *Int. J of Lifesciences, Biotechnology and Pharma.* 2024; 13(10):601-606.

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