International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 835-840 www.ijdmsrjournal.com ISSN: 2582-6018

Profile and Pattern of Mortality from Road Traffic Accident- A Cross Sectional Study In Tertiary Care Hospital, Belgaum

Dr. Jeya Prakash M[1], Dr.Vishal V Koulapur[2], Dr.Ravindra S Hounnugar[3], Dr.Vinay Bannur[4], Dr. Prasanna S Jirli[5], Dr.Tejas Mohite[6] ,Dr.Perumal P[7], Dr Aravind Varman[8], Dr.Pratima R Bhat[9]

[1]Postgraduate,[2]Associate Professor,[3]Professor and Head,[4]Assistant,[5] Professor, [6,7,8 &9]Postgraduate

Department of Forensic Medicine and Toxicology, Jawaharlal Nehru Medical College, KAHER, Belagavi.

Date of Submission: 15-04-2023 Date of Acceptance: 25-04-2023

ABSTRACT:

Background: Understanding the various patterns of fatal injuries in road traffic accidents is important as it influences the effectiveness of the emergency unit of the hospital. **Aim:** To study the profile and pattern of death among road traffic accidents cases. **Methodology:** The current study was conducted at the department of Forensic Medicine, KLES Dr.Prabhakar Kore Hospital & M.R.C, Belagavi. The autopsy report of fatal road traffic accident cases from 1-January-2020 to 31-December 2022 were analyzed. Site of injury and organ involved in injury were noted. Pattern of injuries was tested using the chi-square test for categorical variables, and independent t test for continuous variables. **Results:** Out of 92 autopsy reports, fatal Road traffic accident was noted maximum in the age group of 21- 30 (30.4%), followed by 41- 50 years and 51 to 60 years (16.3%), 31-40 (15.2%) years while 61-70 years, 71-80 years, 10-20 years, 0-10 years included 8.7%, 5.4%, 4.3% and 3.3% subjects respectively. Males were reported in 81% and females in 11% (7:1). Brain injuries were noted in 57.6%, Liver injuries in 25%, kidney injury 6% and other organ injuries in 14% subjects. Minor cases with spleen injury being the least noted in 5%. The site of injury recorded were, upper and lower limbs in 52 (56%) and 40 (43.5%) respectively, abdominal injury in 33(35.9%), head injury in 76 (82.6%) and chest injury in 33 (35.9%). [Table 4].

Conclusion: Head and Brain injury were the most common finding next to the abdominal injury causing death in road traffic accidents. Emergency treatment should focus more efficiently on it to save lives.

Keywords: Road traffic accidents, Fatal RTA, Mortality, Organ Injury, Head Injury, Abdominal Injury, Brain Injury, Chest Injury, Fatal injury.

I. INTRODUCTION:

Vehicle Roads and motorized transportation are seen as indicators of development since they help the community in logistical and socioeconomic ways. Yet, the expansion of the road system has resulted in traffic accidents that cause premature deaths of productive age groups, which is painful for the community. The burden of road traffic injury—in terms of societal and economic costs—is rising significantly for the majority of the world's population, even while the number of lives lost in accidents in high-income countries shows a lower trend in recent decades.[1] Road traffic accidents, which result in 1.24 million deaths annually, are the leading cause of mortality for young people and the eighth most common cause of death worldwide.[2] In India, there were 464,910 officially registered traffic accidents in 2017, resulting in 147,913 fatalities and 470,975 injuries.[3]

One of the Sustainable Development Goal (SDG) targets was to reduce 50% of global road traffic collision deaths and injuries by 2020. [3,4] The aetiology of mortality after RTA, which might be an organ failure or multiple organ failure, must be understood in order to achieve this. Following 1950, the idea of death was centred around the arrest of the cardiorespiratory system that came after the loss of brain function. [5] Hence, the level of brain activity is a key factor in death. In addition to the direct impact of a head injury on the brain, which impairs brain function, various sites and organs in other regions of the body may also be damaged indirectly, depriving the brain of blood and oxygen.

The rationale of this study is to explore the pattern of injury of fatal road traffic accidents that can serve as a valuable data for doctors to implement the emergency treatment more efficiently to prevent mortality in road traffic

International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 835-840 www.ijdmsrjournal.com ISSN: 2582-6018

accidents and also help in strengthening the public health legal measures in the community. Aim of this study is to study the major cause of death among various injuries in fatal cases of road traffic accidents cases reporting to KLES Dr.Prabhakar Kore Hospital & M.R.C, Belagavi. The objective is to determine the number of various organ and site of injury.

II. METHODOLOGY:

An autopsy-based, cross-sectional study conducted in correlation with the relevant clinical records and reports. A Convenient sampling (data from MRD files) on an average 46/year was recorded from data of post-mortems autopsies between 1-January-2020 to 31-December 2022 of road traffic accident subjected to medico-legal autopsy at the department of Forensic Medicine, KLES Dr.Prabhakar Kore Hospital & M.R.C, Belagavi. Ethical clearance was obtained from JNMC institutional ethics committee before starting study.

YEAR	CASES
2020-2021	46
2021-2022	45

III. STATISTICAL ANALYSIS:

The collected data was entered into Microsoft excel software by the examiner. The entered data was exported to SPSS Version 22 software for statistical analysis. The exploratory data analyses checked the distribution of values and presented the results as the mean and standard deviation (SD) for numerical data, and a proportion (%) for nominal data. Pattern of injuries was tested using the chi-square test for categorical variables, and independent t test for continuous variables.

IV. RESULT:

The present study was done to assess the pattern of injuries among fatal cases of road traffic accidents in the autopsy reports. It was observed that the maximum number of cases were in the age group of 21- 30 (30.4%), followed by the age group of 41- 50 years and 51 to 60 years (16.3%) followed by the age group of 31-40 years which is 15.2% followed by the age group of 61-70 years, 71-80 years, 10-20 years, 0-10 years which were 8.7%, 5.4%, 4.3% and 3.3% respectively. [Table 1]. Males (81%) had mortality rates that were 7 times greater than those of females (11%). [Table 2] Out of 92 patient majority (more than 50%) of the patients had brain injuries in 53 (57.6%) subjects followed by liver injury in 23 (25%), kidney injury with 6 (6%) and other organ injuries in 13(14%). Minor cases with spleen injury being the least noted with 5 (5%). The site of injury involved in upper and lower limbs as 52 (56%) and 40 (43.5%) respectively, abdominal injury being reported in 33(35.9%), head injury with 76(82.6%) and chest injury 33(35.9%). Figure 1.

The data were compiled with a focus on the analysis of injuries in the head and thoraco-abdominal region. Additionally, type of the wound and organs most commonly affected and epidemiological factors in relation to victims, vehicles, and sites of impacts were also collected. Besides, features pertaining to hosts (road users), the agents (vehicles) and the environmental condition (road, seasons, time etc.), and their period of survival will be studied. The clinical examination of all the subjects was done by a single examiner with the help of a trained recorder till the required sample size was obtained. The medico-legal records, case sheets and police records were referred to for collecting additional information wherever necessary for cross checking.

Table 1: Age distribution of study subjects

Age	N=92	Percentage
0-10 years	3	(3.3%)
11-20 years	5	(5.4%)

21-30 years	28	(30.4%)
31-40 years	14	(15.2%)
41-50 years	15	(16.3%)
51-60 years	15	(16.3%)
61-70 years	8	(8.7%)
71-80 years	4	(4.3%)

Table 2: Gender distribution

Gender	**N=92**	**Percentage**
Male	81	88%
Female	11	12%

Table 3: Distribution of organ injury

Organ involved	**Number**
Brain	53 (57.6%)
Spleen	5(5.4%)
Liver	23(25%)
Kidney	6(6.5%)
Others	13(14%)

International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 835-840 www.ijdmsrjournal.com ISSN: 2582-6018

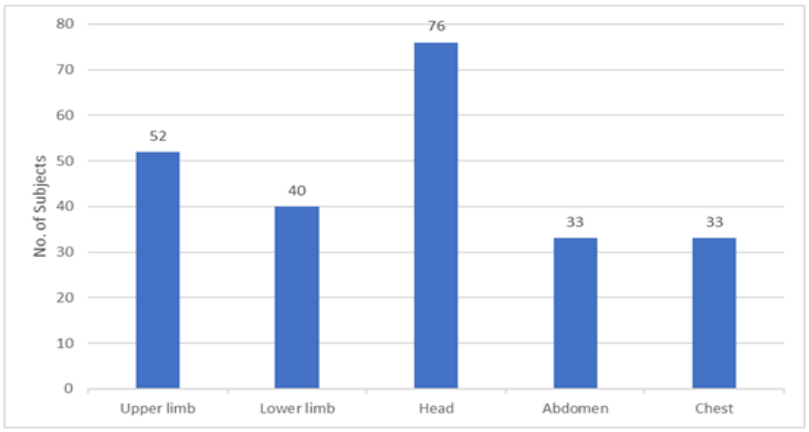

Figure 1: Distribution of Injury site

V. DISCUSSION:

According to the most recent Global Burden of Diseases 2019 survey, road injuries were ranked eighth among the top twenty primary causes of disease burden in 1990 and are currently ranked seventh globally in 2019.[6] In India as well, this burden of damage displays a similar pattern. According to earlier research, India's public health will be seriously impacted by a rise in the number of road accident-related deaths and incidence cases.[7] This is due to the fact that India is notorious for having low public health spending levels and that the government has never made disease-related spending a priority.

The result of this current retrospective study from the autopsy report of fatal road traffic accident conducted in the hospital of Belgaum shows that, maximum number of cases were in the age group of 21- 30 (30.4%), followed by the age group of 41- 50 years and 51 to 60 years (16.3%) followed by the age group of 31-40 years which is 15.2% followed by the age group of 61-70 years, 71-80 years, 10-20 years, 0-10 years which were 8.7%, 5.4%, 4.3% and 3.3% respectively. This shows that most of the fatality was observed in the age group of 21 to 30 years. This was in accordance with the results of previous studies on different study populations. N Bayapa reddy et al in 2014, did a study from autopsy reports and found that the age of victims in RTA was majorly between 21 to 40 years, most of the victims were male 92 (92.0%), lungs were the most commonly involved organ 24 (92.3%) while, heart 2 (7.6%) liver 16 (32.6%) followed by spleen 9 (18.3%).[8] Another study by E Sileshi et al in 2019, highest incidence of RTA was observed among the age group of 30-40yrs i.e. 45 (23.1%) cases followed by 40-50 years having 40(20.5%) cases. The least age group involved was more than 70 years having 7(3.6%) cases.[9] Recent study by Ravi Kant Saini et al in 2022, shows that majority of the victims were between the ages of 21 and 40.[5] Mohan gushinge et al in 2017, reported that males accounted for 85.96% cases with commonest age group of 21-30 years (24.56%).[10]

However, contradictory with the study by Farooqui JM et al in 2013, reported The most commonly affected age group was 20-39 years. Men died in RTA more than women. The majority of RTA victims (n=46, 46.93%) died due to head injury.[11] Also, another study by Salih et al in 2019 did a retrospective study in Sudan on the RTA fatal cases in which they reports that, The highest number of deaths was 36 (33%), recorded in the age group 20-29 years, and the lowest number was 6 (5.5%) in the age group 60 years and above.

The male victims were higher than the female in this current study with the ratio of 7:1 males had mortality rates of 81% and females had mortality rates of 11%. Similar results were seen in the following previous study reports. Behera DK et al reported that the total mortality of male person injuries are more as compared to female persons.[12] Tirpude BH et al in 2017 found that most of the victims were male (86.7%) in the age group 21-30 years (36%). He also reports that fatal head injuries are seen in 50%.[13]

Another study by E Sileshi et al in 2019, shows that most of the victims were males 81.5% and 18.5% female, male to female ratio of 4.4:1.[9]

Recent study by Ravi Kant Saini et al in 2022, shows that male victims accounted for 85.90 percent of instances (n=317), while female victims accounted for 14.9 percent (n=52).[14] Salih et al in 2019 did a retrospective study in Sudan on the RTA fatal cases in which they reported that, Males died due to RTA more than females with a ratio of 2:1.[15] K. Ashwini Narayan et al in 2020, out of 150 (14.80%) cases of road traffic accident autopsy,

113 (75.33%) subjects were males and 37 (24.66%) were females.[16]

Head injury is the most common cause of death noted from the autopsy reports of the current study in 76 (82.6%) subjects and brain involvement in 53 (57.6%) subjects. This was very similar to the report from a recent previous study by Ravi Kant Saini et al in 2022, which shows that coma was the most common cause of death, accounting for 57.18 percent of all deaths (n= 211).[14] Also, Salih et al in 2019 reports that, from the majority of RTA victims, 50 (45.9%) died due to head injury followed by 29 who died from multiple injuries/fractures 29 (26.6%). Hemorrhagic shock was the cause of death in 22 (20.2%) cases. Septicemia and complications were the cause in 5 (4.6%) and 2 (1.8%) cases, respectively.[15]

Mohan ghushinge et al in 2017, reported that liver (58.77%) is the most commonly involved organ with laceration (77.61%) is the most common type of injury in autopsy reports of 114 subjects.[10] Slovic ZS et al in 2022, showed that Liver is the most commonly injured abdominal organ. Liver destructions, liver lacerations, spleen laceration, intestines injuries, simultaneous occurrence of head, chest and abdominal injury or simultaneous occurrence of head and abdominal injury in a higher percentage lead to death at the scene. [17]

Our study shows that chest injury was noted in 33 (35.9%) subjects which was contradictory with the previous study by Pathak Manoj Kumar et al in 2006, which reports 61.76% chest injuries in combination with other regional injuries. commonest injuries in fatal road traffic accident cases next to head injuries. His study report was also contradictory to the result of our study's liver injury report which was 23(25%) but their report showed 12.19% liver injury.[18]
Reddy NB et al in 2014, reported lower limb injury in 72.5%, upper limb injury in 57.7%, head injury in 54.3%, abdomen injuries in 40%.[19]

VI. CONCLUSION:

It is clear mortality due to road traffic accidents are majorly noted among male gender and also in the age group of between 21 to 30 years, mainly due to the head and brain injury. So there is an urgent need to address head and brain injury as early as possible in a more efficient way to save lives. Or else the total number of deaths by road traffic accident may reach 2,50,000 by the year 2025.

REFERENCE:

1. Fletcher J. Rapid desk-based study: The economic impact of road traffic accidents and injuries in developing countries [Internet]. 2014. Available from: http://dx.doi.org/10.12774/eod_hd.june2014.fletcher
2. Mohammed AA, Ambak K, Mosa AM, Syamsunur D. A review of traffic accidents and related practices worldwide. The Open Transportation Journal. 2019 Jun 30;13(1).
3. Pal R, Ghosh A, Kumar R, Galwankar S, Paul SK, Pal S, Sinha D, Jaiswal AK, Moscote-Salazar LR, Agrawal A. Public health crisis of road traffic accidents in India: Risk factor assessment and recommendations on prevention on the behalf of the Academy of Family Physicians of India. Journal of family medicine and primary care. 2019 Mar;8(3):775.
4. Moyer JD, Eshbaugh M, Rettig J. Cost analysis of global road traffic death prevention: Forecasts to 2050. Development Policy Review. 2017 Nov;35(6):745-57.
5. Bernat JL. On noncongruence between the concept and determination of death. Hastings Center Report. 2013 Nov;43(6):25-33.
6. Stein C. Global Burden of Disease (GBD) Approach and the Use of Disability-Adjusted Life Years (DALY) at the World Health Organization (WHO).
7. Dandona R, Kumar GA, Gururaj G, James S, Chakma JK, Thakur JS, Srivastava A, Kumaresh G, Glenn SD, Gupta G, Krishnankutty RP. Mortality due to road injuries in the states of India: the Global Burden of Disease Study 1990–2017. The Lancet Public Health. 2020 Feb 1;5(2):e86-98.
8. Reddy NB, Madithati P, Reddy NN, Reddy CS. An epidemiological study on pattern of thoraco-abdominal injuries sustained in fatal road traffic accidents of Bangalore: Autopsy-based study. Journal of emergencies, trauma, and shock. 2014 Apr;7(2):116.
9. Sileshi E, Padubidri JR, Shetty B, Dsouza HL, Belay M, Jibril I. Pattern of Craniocerebral Injuries in Road Traffic Accident Cases in Mangalore-Autopsy based Retrospective Study. Indian Journal of Forensic Medicine & Toxicology. 2019 Oct 1;13(4).
10. Gushinge M, Kadu S. Autopsy study of abdominal injuries in road traffic accidents.

Liver. 2017;67:58-77.
11. Farooqui JM, Chavan KD, Bangal RS, Syed MA, Thacker PJ, Alam S, Sahu S, Farooqui AA, Kalakoti P. Pattern of injury in fatal road traffic accidents in a rural area of western Maharashtra, India. The Australasian medical journal. 2013;6(9):476.
12. Behera DK, Singh SK, Choudhury DK. The burden of transport injury and risk factors in India from 1990 to 2019: evidence from the global burden of disease study. Archives of public health. 2022 Dec;80(1):1-8.
13. Tirpude BH, Bhagwat D, Murkey PN, Khan S, Khandekar IL, Zopate P, Ambedkar R, Ramteke R. Profile of Cases of Fatal Road Traffic Accident with Respect to Intra Intracranial Injury and Cause of Death in a Centre at Rural India-Autopsy based Study. Medico-Legal Update. 2017 Jul 1;17(2).
14. Saini RK, Dutta S, Sisodia N, Gupta P. Fatal Injuries Associated with Road Traffic Accidents: An Autopsy Based Retrospective Observational Study on Brought Dead Cases in Jaipur, Rajasthan. Indian Journal of Forensic Medicine & Toxicology. 2022 Oct 10;16(4):69-75.
15. Salih RK. Pattern of Fatal Injuries due to Road Traffic Accidents in Khartoum, Sudan: A Retrospective Study. Arab Journal of Forensic Sciences & Forensic Medicine. 2019 Dec 31;1(10):1397-402.
16. Narayan KA. Study of Pattern & Distribution of Injuries in Fatal Road Traffic Accident Cases Autopsied at MIMS, Mandya. Indian Journal of Forensic Medicine & Toxicology. 2020 Jul 30;14(3):357-60.
17. Slović ŽS, Vitošević K, Mihajlović F, Trifunović A, Todorović M. Abdominal injuries in road traffic accidents-autopsy study. Vojnosanitetski pregled. 2023(00):42-.
18. Medico-Legal Update [Internet]. [cited 2023 Feb 21]. Available from: https://www.indmedica.com/journals.php?journalid=9&issueid=82&articleid=1086&action=article
19. Ernstberger A, Joeris A, Daigl M, Kiss M, Angerpointner K, Nerlich M, Schmucker U. Decrease of morbidity in road traffic accidents in a high income country–an analysis of 24,405 accidents in a 21 year period. Injury. 2015 Oct 1;46:S135-43.