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FATAL ROAD TRAFFIC ACCIDENTS: 2 YEARS RETROSPECTIVE STUDY

Forensic Medicine

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ABSTRACT

Road Traffic Accident (RTA) can be defined as ,'An event that occurs on a way or street open to public traffic; resulting in one or more persons being injured or killed, where at least one moving vehicle is involved. This study was based on Information on victim's age, gender, educational, occupational, time, place of incidence, type of road, whether victim was pedestrian or any vehicle rider, type of offending vehicle, number of people involved, nature, manner and mode of death, parts of the body involved, nature of injuries etc, were collected from interviews of persons/ policeman accompanying the victim's body and from papers involved in the medico-legal autopsy. It was concluded in present study, that we require preventive measures, a systematic approach needs to be incorporated to minimize deaths. More man power needs to be trained and educated to meet these needs.

KEYWORDS

RTA (Road Traffic Accident), PEDESTRIANS, HEAD INJURY, SDH(Sub Dural Hemorrhage), CRUSH INJURY, FATAL.

INTRODUCTION

A WHO Advisory Group in 1956 defined accident as an "unpremeditated event resulting in recognizable damage" (WHO, 1957). An accident has been defined as: "an unexpected, unplanned occurrence which may involve injury" (Hogarth, J., 1978).

Road traffic accidents—the leading cause of death by injury and the tenth-leading cause of all deaths globally—now make up a surprisingly significant portion of the worldwide burden of ill-health. An estimated 1.2 million people are killed in road crashes each year, and as many as 50 million are injured. The number of people killed on Indian roads recorded a rise of 2.37 per cent to 1.51 lakh in 2018 and 70 per cent of the victims fell in the age bracket of 18-45 years. Bihar registered 541 fewer deaths in road crashes in 2016 in comparison to the previous year. Bihar was ranked 10th in road accidents having 4989 deaths in 2013 & Patna was ranked 5th in road traffic accidents .Governments need to take action to address road safety in a holistic manner. This requires involvement from multiple sectors such as transport, police, health, education, and actions that address the safety of roads, vehicles, and road users.

AIMS AND OBJECTIVE

The objective of this study was to analyze the trend of fatal road traffic accidents and to find out the measures for the prevention of their causative factors.

REVIEW OF LITERATURE

Road Traffic Accident (RTA) ,involve high human suffering and socioeconomic costs in terms of premature deaths, injuries, loss of productivity, and so on. Menon A et al (2008) in their study on 682 fatal traffic injuries sustained to the head found most of the accidents occurred between afternoon and evening hours (14:00-22:00 Hours). There was a marked male preponderance (84.6%). The most vulnerable age group was found to be between 21 and 30 years. Two wheeler occupants were most commonly involved. Skull fractures were present in 88.88% of the cases. In most of the cases, fissured fractures were found (23%). Among intra-cranial hemorrhages, subdural hemorrhage was found in 52.63% and subarachnoid hemorrhage in 27.27% of cases. Data from National Crime Records Bureau, Ministry of Home Affairs (2013) shows share of two-wheeler accidents to be 24.9 %, trucks/lorry were 17.5 %, bus 8.8 %, pedestrians 9 %. (NCRB, MHA, 2013). The purpose of this study was to analyze the trend of fatal road traffic accidents and to find out the measures for the prevention of their causative factors

OBSERVATIONS AND DISCUSSIONS

This study entitled "Analytical approach to fatal road traffic accidents : 2 years retrospective study in patna." analyzes in detail 150 fatal road traffic accident cases which were brought into the mortuary of Department of Forensic Medicine, Patna Medical College during the period from October 2017 to September 2019.

In this study, 86.67 % were males and 13.33 % female victims.15-44 age brackets had 95 victims of which there were 82 males and 13 females. Menon A et al . also showed marked male preponderance in road accidents. Arvind K et al [12] showed that male female ratio was 7.49:1. 82 % were in age group 15-59. Out of 150 cases, pedestrians and riders of two-wheeler were 36.67 % each, cyclists were 16 %. In two-wheeler's riders age groups 15-29 had highest 27(60 %, n=45). Pedestrian deaths in 60-75 age groups were 47.61 %, signifying proneness of this age group to road accidents. Maximum victims of users of two-wheelers were 18 (32.72%, n=55) from service class, next 15 (27.27%, n=55) were students. Students were maximum amongst cyclists followed by 6 each labourer's and agriculturists group. In pedestrians 30 (54.54 %, n=55) were agriculturists (highest).

Maximum two-wheeler's users to suffer casualties were Graduates (45.45 %, n=55) followed by higher secondary level education (27.27 %, n=55). Most pedestrians were educated till primary (43.63 %, n=55). Socioeconomic status is well known to be a risk factor for injury generally, and road traffic injury is no exception. Pedal cycle injuries are common in India, but severity is less due to slow speeds. The injuries to the cyclist are similar in distribution and severity to those sustained by a pedestrian (Biswas G, 2012).Heavy motor vehicles dominated highway accidents (75.38 %, n=65) followed by light motor vehicles (18.4 %, n=65). On city roads (52.7 %, n=55), and lanes (66.67 %, n=30) the dominant offending vehicles were light motor vehicles. Next major offenders were heavy motor vehicles on both city and lane roads.

Riders of two-wheeler's suffered maximum 29 (52.72 %, n=55) casualties due to collision with Heavy motor vehicles, their second highest toll was claimed by Light Motor Vehicles 18 (32.7%, n=55). Cyclists too were major sufferers at the hands of above two categories of vehicles. Maximum 25 (45.45 %, n=55) pedestrian deaths were caused by Light Motor Vehicles, close followers of this were Heavy motor vehicles in causing 24 (43.63 %, n=55) pedestrian tolls. Recent studies have shown that pedestrians and motorcyclists have the highest rates of injury in Asia (Wang SY et al, 2003).

Highways claimed maximum deaths of two-wheeler's riders (60 %), their joint death toll on city roads and lanes were 40 %. Most of the cyclists sustained fatal injuries on city roads (58.3 %). City roads and lanes together shared 75 % pedestrian fatalities. Jonathon L. et al.,

(2003) studied fatal pedestrian crashes in American Indians and Alaskan Natives, and found rural pedestrian crashes occurred more frequently in highways (p<0.0001) owing to lacking traffic control devices (p<0.0001) and artificial lighting (p<0.0001).

Two-wheeler's riders (58.2 %; n=55), pedestrians (38.2 %; n=55) and cyclists (29.16 %; n=24) deaths were due to coma. Death due to hemorrhagic shock was seen in 37.5 % cyclists, 21.8 % two-wheeler riders and 20 % pedestrians. 27.27 % pedestrians, 20.8 % cyclists and 7.2 % two-wheeler riders died instantaneously due to crush injury. In study of Zadeh H.S. et al., (2002) most common cause of death was head injury (49.8%). Rest was multiple trauma (35%), internal bleeding and visceral laceration (11.1%), cervical spinal cord injury (1.9%), complications of trauma (1.6%) and others (0.6%) which is similar with present study. City roads and lanes were invariably equally risky since during morning peak traffic hours till midnight. Highways were riskier since afternoon till late midnight hours. Late evening hours (20:00-24:00) were more risky on all types of roads. Maximum on spot deaths were seen amongst pedestrians 32 (58.18 %, n=55) followed next by 14 (25.45 %, n=55) two-wheeler's riders and 9 (37.5 %, n=24) cyclists. Cyclists and two-wheeler's riders were equal in numbers who died on their way to hospital. In hospital deaths were maximum 32(58.18 %, n=55) two-wheeler riders followed by 21 (38.18 %, n=55) pedestrians. Two wheeler accidents have reportedly a maximum case fatality in accidents (WHO, 2004).

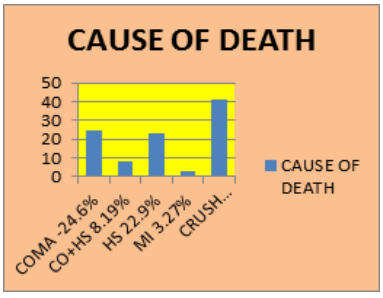
80.3 % cases opted for treatment at tertiary centres which reflects the burden that our tertiary centres share in treating accident cases.

Those who got their First Aid within an hour total 23 (34.8 %, n=66) survived till one week. . Next survivors were 21 out of total 66 who were given First Aid within 30-60 min of accident, out of which those surviving till 6 hours and from 7-12 hours were 7 and 5 respectively, 1-2 and 2-7 day survivors were 5 and 4 respectively. Although survival time of victims is highly variable considering the severity of injuries sustained, still after accident each second matters. Amongst on spot fatalities, maximum 25 (40.98%, n=61) deaths were instantaneous due to extensive crush injury. Next 15 (24.59%, n=61) deaths were due to coma . 5 (7 %, n=61) persons died due to coma + hemorrhagic shock, (fig. 1). Brunicardi F.C., et al., eds (2010) said the Advanced Trauma Life Support (ATLS) provides a structured approach to the trauma patient with standard algorithms of care; it emphasizes the "golden hour" concept that timely prioritized interventions are necessary to prevent death.

In skull and facial bones fractures, Calvaria (skull) + maxilla and mandible (facial skeleton) had undergone crush injuries in 13.3 % (n=150), temporo-parietal area and frontal alone were involved in 9.33 % and 8 % cases respectively. Occipital alone was involved in 4.7 %.

Subdural hemorrhage was 26 % and Subdural + Extradural hemorrhage was seen in 10.67% cases. 28.66 % cases had pale brain substance primarily due to hemorrhagic shock. 20 (13.33 %, n=150) cases were having severe crush injuries of calvaria resulting in loss of brain substance.

Figure 1: Cause of Death In On Spot Death cases in Traffic Accidents.



Ribs were bilaterally involved in 21.3 % (n=150). In unilateral involvement right (6.7 %, n=150) side rib fractures were slightly more than left (6 %, n=150).

Lungs showed bilateral involvement in 18 % (n=150) cases. Right sided involvement of lungs (10 %, n=150) were more than left (6 %, n=150). Ribs and lungs involvement shared similar pattern.

Extensive crush injury of entire liver was seen in 9.3% cases. 10 % laceration injuries were noted on right lobe compared to 2 % left lobe of liver. Thus, right lobe of liver had significantly higher rate of sustaining injuries than left lobe.

Laceration of spleen of varying degree was noted in 10.7 % cases. In 89.3 % cases spleen was not involved. Left humerus was involved in 4.7 %, right in 3.3 % cases. Both right and left hands had equal 2 % crush injuries. Fracture of left radius + ulna was seen in 2.66 %, on the right side it was in 2 % case. Thus, left side had more predilection for involvement compared to the right.

Bilateral femur fractures and bilateral tibia + fibula had 4 % fractures each. Right tibia + fibula fractures were in 8 % and left in 4 %. Thus, right side had more predilection for involvement compared to the left in case of lower limbs.

In 8 %, pelvic fracture cases were associated with rupture of urinary bladder. In 4 % cases although pelvic fracture was there, yet urinary bladder was spared and only contusion were seen in such cases. Rest 88 % cases neither had pelvic injuries, nor urinary bladder rupture. Kanchan T, [et al.., 2012] in their study found head injuries in 75 % cases followed by 6.7 % abdominal injuries as cause of death. The mean duration of survival following road traffic accident was 6-7 days which are similar with the findings of this present study.

CONCLUSION

Fatal road traffic injuries are on the rise claiming precious human lives. This study finds that motor vehicle occupants suffered more severe injuries than the pedestrians. Whilst on the spot injuries requires preventive measures, a systematic approach needs to be incorporated to minimize deaths More man power needs to be trained and educated to meet these needs. This also necessitates development of trauma care centres at those places where approach is easy and hassle free in case of emergencies.

A futuristic approach may be the consideration to design systems which will lessen frequent transportation of people, revamping of traffic systems with advanced traffic designs. Encouragement of e-learning portals or development of boarding school culture will lead to less school bus accidents. Finally, this study concludes with the note that the rising problem of traffic accident related injuries and deaths needs to be addressed with utmost care.

REFERENCES

[1] Accidental Deaths and Suicides in India (2013), National Crime Records Bureau (Ministry of Home Affairs).
[2] Bartolomeos K et al., eds. (2012). Fatal injury surveillance in mortuaries and hospitals: a manual for practitioners. Geneva, World Health Organization, 2012, Pp: 1-2.
[3] Biswas G (2012), Transportation Injuries, Review of Forensic Medicine & Toxicology, 2nd Edition (2012), Jaypee Brothers Medical Publishers (P) Ltd., New Delhi, Pp: 249-255.
[4] Brunicardi F.C., et al., eds (2010), Trauma, Schwartz's Principles of surgery, 9th Edition, The McGraw-Hill Companies, Inc., USA, Pp: 135-196.
[5] Eckert Willam G, (1977): Crash injuries on Road, Tedeschi, Eckert, Tedeschi,, Vol.2, Chap. 30, Pp: 853-863.
[6] Jonathon L. et al., (2003), Rural and Urban Fatal Pedestrian Crashes Among United States . Annu Proc Assoc Adv Automot Med 2003; 47: 127–143.
[7] Kanchan T, Kulkarni V, Bakkannavar S.M., Kumar N, Unnikrishnan B, Analysis of fatal road traffic accidents in a coastal township of South India, , Journal of Forensic and Legal Medicine 19 (2012) Pp: 448-451.
[8] Kumar M, Kumar N., (2014), Fatal Internal Injuries-A Case Report of Mismatch Vehicular Collision, Journal of Karnataka Medico Legal Society, Volume 23, Number 1, Jan-Jun 2014, Pp: 30-32.
[9] Menon A et al., (2008), Pattern of fatal head injuries due to vehicular accidents in Mangalore, Journal of Forensic and Legal Medicine 15 (2008). Pp: 75–77.
[10] Modi J, et al., (2012), Vehicular Traffic Injuries, A textbook of Medical Jurisprudence and Toxicology, 24th Edition (2012), Lexis Nexis Butterworths Wadhwa, Nagpur, Chapter 27, Pp: 577-582.
[11] Park K. (2013) Accidents and Injuries, Park's Textbook of Preventive and Social Medicine, 22nd Edition, M/s Banarsidas Bhanot Publishers, Jabalpur (India), Pp: 374-382.
[12] Reddy K.S.N., (2012), Traffic Accidents, The Essentials of Forensic Medicine and Toxicology, 31st Edition (2012), Published by K. Saguna Devi, Hyderabad, Pp: 257-267.
[13] WHO (2004), Road safety is no accident: a brochure for world health Day. Geneva: World Health Organization; 7 April 2004. 2004:200.
[14] Zadeh H.S., Vahabi R, Nazparwar B, Amoei M, An epidemiological study and determination of causes of traffic accident-related deaths in Tehran, Iran (during 2000-2001), Journal of Clinical Forensic Medicine (2002) 9, Pp: 74-77.