International Journal of Orthopaedics Sciences

ISSN: 2395-1958
IJOS 2018; 4(1): 23-26

www.orthopaper.com
Received: 09-11-2017
Accepted: 10-12-2017

Dr. Aditya K Agrawal
Assistant Professors, Dept. of Orthopaedics, SBKS MI&RC, Waghodia, Vadodara, Gujarat, India

Dr. Madharam Bishnoi
Assistant Professors, Dept. of Orthopaedics, SBKS MI&RC, Waghodia, Vadodara, Gujarat, India

Dr. Patel Mayur Girishbhai
Third year MBBS students, SBKS MI&RC, Waghodia, Vadodara, Gujarat, India

Patel Mital Vishnubhai
Third year MBBS students, SBKS MI&RC, Waghodia, Vadodara, Gujarat, India

Patel Parth Pravinbhai
Third year MBBS students, SBKS MI&RC, Waghodia, Vadodara, Gujarat, India

Patel Pruthvi Vinodbhai
Third year MBBS students, SBKS MI&RC, Waghodia, Vadodara, Gujarat, India

Correspondence
Dr. Madharam Bishnoi
Assistant Professors, Dept of Orthopaedics, SBKS MI&RC, Waghodia, Vadodara, Gujarat, India

Epidemiological study on patients with road traffic accidents admitted in department of orthopaedics at a rural hospital in India (a retrospective study of more than 1000 patients)

Dr. Aditya K Agrawal, Dr. Madharam Bishnoi, Dr. Patel Mayur Girishbhai, Patel Mital Vishnubhai, Patel Parth Pravinbhai and Patel Pruthvi Vinodbhai

DOI: https://doi.org/10.22271/ortho.2018.v4.i1a.06

Abstract
Background & Purpose: Road trauma is now defined as a killer disease by W.H.O. (World Health Organisation). India is also signatory to Brasilia declaration and is committed to reduce the number of road accidents and fatalities by 50 per cent by 2020. AIM: To evaluate the data collected on patients with road traffic accidents admitted to Dept. of orthopaedics at Dhiraj general hospital from 1st November 2008 to 30th November 2017.
Materials and Methods: The study design is a single centre retrospective observational study with the target population being all patients 0-80 years admitted to Dept. of Orthopaedics with history of road traffic accidents. The period of study is from 1st November 2008 to 30th November 2017.
Results: We have found a total of 857 accidents occurred leading to admission of 1014 patients in last 10 years in our rural hospital. More than 65% accident patients were found to be in the age group of 20-40 years and the next common age group being 40-50 years (146, 14%). Males (781, 77%) were more affected than females (233, 22%).
Discussion: Road fatality rates in India are probably among the highest and out of 1.25 million deaths worldwide every year, 10 per cent (about 125,000) of all road deaths are in India.
Conclusion: After this retrospective study we have come to know about the increasing trends in number of road traffic accidents. About 80% people are of 20-40 years age group, the bread winners of the family. Hence creating awareness about obeying traffic rules can help in reduction of road accidents.

Keywords: Hip fracture; Bone turnover markers; CTX; PINP; Vitamin D

1. Introduction
Road trauma is now defined as a killer disease by W.H.O. (World Health Organisation). A road traffic accident is any injury due to crashes originating from, terminating with or involving a vehicle partially or fully on a public road. Data shows that more than 1.3 lakh people have died on Indian roads and 3.8 million are seriously disabled for life per year [1]. There are estimated 12000 deaths on average every year in Indian state of Gujarat. The saddest part is that it affects age group 20-40 years – most productive population in the country. In India, patients with road traffic accident spend 22 million hospital days per year (more than cardiac & cancer patients together) leading to estimated loss of Rs. 5200 crores and 3.8 million patients are seriously disabled for life, mostly bread-winners of the family [2]. The United Nations has rightly proclaimed 2011-2020 as the decade of action on road safety. India is also signatory to Brasilia declaration and is committed to reduce the number of road accidents and fatalities by 50 per cent by 2020 [3].

Aim: To evaluate the data collected on patients with road traffic accidents admitted to Dept. of orthopaedics at Dhiraj general hospital from 1st November 2008 to 30th November 2017.

Objectives: 1. To evaluate the data on patients admitted with road traffic accidents in terms of

demographics, mechanism of injury, body part fractured, type of fracture, type and number of operations done. 2. To evaluate the data in terms of number of deaths and to evaluate the reason for those deaths. 3. To evaluate the data in terms of associated injuries.

Materials and methods: The study design is a single centre retrospective observational study with the target population being all patients 0-80 years admitted to Dept. of Orthopaedics with history of road traffic accidents. The data collection is from medical records Dept., Dhiraj General Hospital with sample size -> 1000 patients and the period of study: 1st November 2008 to 30th November 2017. The inclusion criteria includes all patients with age group 0-80 years admitted to Dept. of Orthopaedics Dhiraj General Hospital with history of road traffic accident and all patients treated with conservative and operative management of fractures due to road traffic accidents. The exclusion criteria include patients admitted with fractures to Dept. of Orthopaedics not related to road traffic accidents and patients having fractures due to industrial accidents. The clinical parameters / proforma include the following as shown in table 1.

Table 1: Clinical Proforma / Parameter

Demographics: Name IPD number Age Sex Phone number Occupation Addiction	Date of Injury Date of Admission Date of Operation Date of Discharge Mechanism of injury (Type of vehicular accident) Body region(s) involved Type of fracture – open / closed Associated injury – Head / Chest/ Abdomen	Type of management – Conservative / operative Type of operation – Debridement / external fixator/ internal fixation Number of operation(s) Complications – Scar, stiffness, infection, range of movement

Confidentiality of the participants was maintained at all levels. No participant inclusion form and informed consent were needed as it is a retrospective study. All clinical photographs and x rays were focused on the affected part of the limb. Any change in study protocol, or design was communicated to the "Institutional Ethics Committee" and their approval was taken.

Results

We have found a total of 857 accidents occurred leading to admission of 1014 patients in last 10 years in our rural hospital from November 2008 till November 2017. Out of 1014 patients, 759 (74.85%) patients had to be operated either with debridement and external fixator in case of 296 open fractures (38.99%) or nailing and plating in case of displaced closed fractures (463, 61.03%). 255 patients were treated conservatively for undisplaced fractures and contusions using either plaster or crepe bandage. More than 65% accident patients were found to be in the age group of 20-40 years and the next common age group being 40-50 years (146, 14%). Males (781, 77%) were more affected than females (233, 22%). Individual falling from two wheelers was the most common cause for road traffic accident patients in our hospital (38%), followed by collision between two vehicles (33%). Alcohol consumption also formed a significant percentage of cause leading to road traffic accidents (28%). As far as fractures are concerned, patients were having lower extremity fractures (591, 58.17%) more compared to upper extremity fractures (402, 39.64%). The common upper extremity fractures included distal radius-ulna fractures (84, 8.29%) followed by proximal humerus fractures (69, 6.8%). The commonest lower extremity fractures included 40% being around the knee joint. These include tibia-fibula shaft fractures and proximal tibia fractures (more than 9% each) followed by distal femur fractures (8.54%) and patella fractures (around 7%). The details are shown in the table 1-7.

Table 2: Incidence of patients with road traffic accidents admitted to department of orthopaedics.

Sr. No.	Year	No. Of accidents	Percentage
1	2008	87	8.58%
2	2009	123	12.13%
3	2010	79	7.79%
4	2011	113	11.14%
5	2012	101	9.96%
6	2013	91	8.97%
7	2014	93	9.17%
8	2015	127	12.53%
9	2016	103	10.16%
10	2017	97	9.57%
	10	1014	100

Table 3: The distribution of patients with road traffic accidents among different age groups.

Sr. No.	Age	No. of accidents	Percentage
1	0-10	12	1.18%
2	10-20	52	5.13%
3	20-30	354	34.91%
4	30-40	312	30.77%
5	40-50	146	14.39%
6	50-60	64	6.31%
7	60-70	46	4.54%
8	>70	28	2.76%
	TOTAL	1014	100

Table 4: The sex distribution of patients admitted due to road traffic accidents.

Sr. No.	Sex	No. Of accidents	Percentage
1	Male	781	77.02%
2	Female	233	22.98%
	Total	1014	100%

Table 5: The distribution of patients according to the causes for road traffic accidents.

Sr. No.	Type of accident	No. Of accidents	Percentage
1	Fall / slip	389	38.36%
2	Collision	338	33.33%
3	Alcohol	287	28.30%
	Total	1014	100%

Table 6: Patients requiring operation and those not requiring operation.

Total	1014			100%		
Number of operated cases	759	296 open fractures	463 closed fractures	74.85%	38.99% of operated cases (29.19% of total cases)	61.03% of operated cases (45.66% of total cases)
Number of non-operated cases	255			25.15%		

Table 7: Upper and lower extremity injuries among patients admitted with road traffic accidents.

Body part	Number	Percentage
Clavicle	48	4.72%
Scapula	2	0.2%
Shoulder dislocation	6	0.62%
Proximal humerus	69	6.8%
Shaft of humerus	48	4.72%
Distal humerus	39	3.8%
Elbow dislocation	5	0.52%
Proximal radius ulna fractures	17	1.72%
Radius ulna shaft fractures	46	4.5%
Distal radius ulna fractures	84	8.29%
Carpal bone fractures	14	1.52%
Metacarpals and phalanx fractures	24	2.3%
Upper extremity fractures	402	39.64%
Spine fractures	12	1.2%
Pelvis & Acetabular fractures	9	1%
Hip dislocation	5	0.5%
Proximal femur fractures	38	3.76%
Femur shaft fractures	76	7.46%
Distal femur fractures	87	8.54 %
Patella fractures	67	7.67%
Proximal tibia fractures	103	9.67%
Tibia fibula shaft fractures	110	9.97%
Distal tibia fibula fractures	84	8.27%
Tarsal bone fractures	12	1.22%
Metatarsal and toes fractures	9	0.93%
Lower extremity fractures	591	58.17%

Discussion

Road fatality rates in India are probably among the highest and out of 1.25 million deaths worldwide every year, 10 per cent (about 125,000) of all road deaths are in India [4]. This study shows that total accident population is 1014 and out of them road traffic accidents are highest among 20-40 years of age group. About 65.68% people belong to this age group because they are the ones who have more vehicle usage hence the probability is also more. Also, they like to drive in speed as adrenaline is at comparatively higher levels than the other groups. Peer pressure, liberal society, high intake of cigarettes, alcohol and other drugs, use of mobile phones while driving also leads to high number of road traffic accidents. About 80% people are males because in rural area females are mostly house wives and males travel a lot for work and other purpose. Also consumption of alcohol contributes in significant numbers causing road traffic accidents. Though Gujarat is a dry state as far as alcohol consumption is concerned, law is not able to keep strict check under the population. Also, we get victims especially heavy vehicle drivers from neighbouring states because of better tertiary level care in our city. We have also come across situations where victims say they were left unattended for hours on road due to unavailability of emergency ambulance services. Onlookers just sympathise as they are afraid of police harassment. It is important to note that early transport of trauma victim to a proper trauma centre without doing further damage along expert medical attendance within the golden hour is mandatory. Every 30 minutes delay in transportation of polytrauma patients cause 30% rise in the mortality. Patients with associated injuries such as head injury, chest injury, abdominal injury or pelvic injury along with crushed extremities are defined as polytrauma patients. They have to be managed under ATLS (Advanced Trauma Life Support) using ABCDE (Airway, Breathing, Circulation, Deformity correction & prevention of Environmental exposure) protocols [5].

It is found that trucks are parked on highway which reduces the effective width of carriageway and creating traffic hazards to high speed moving traffics. Unauthorized median openings are found which should be immediately closed. Missing road and median markings to be done and speed signs should match with speed. Access and service lanes are also deficient which requires immediate improvement [6]. The most Vulnerable Road User (VRU) i.e. pedestrians and cyclists facilities are lacking and needs to be facilitated on priority. The road accidents deaths and injuries are global phenomena but more severe situation in mixed traffic condition as prevailing on Indian multilane highways. Concept of quality management and sustainable safety has gained ground in the past two decades and may have been among the factors that led policymakers and project managers to realize the need for purely safety-oriented tools [7]. Road Safety Audit (RSA) is one of the best tools for improvement of road safety; in which experts attempt to identify potentially dangerous features on the highway environment and suggest remedial measures. Road Safety Audit can be defined as a systematic approach for evaluation of existing or new roads by an independent audit team at the stages of planning, design, construction, operation &maintenance to achieve accident free roads and to enhance overall safety performance. Road Safety Audit (RSA) was originated in Great Britain (1980) is now spread in several countries around the world. The RSA system established in UK spread to USA, New Zealand, Australia, Denmark, Canada, Malaysia, China, Japan and Singapore and now it is used as a model in many countries for the formulation of guidelines and planning of their trunk roads. It is at varying stages of implementation in developing countries like India, South Africa, Thailand, Egypt, Pakistan and Bangladesh [8, 9, 10].

Pointing out that one death takes place every three minutes due to road accidents, the Supreme Court of India has directed the Centre and all States and Union Territories to implement road safety measures in right earnest. A very large number of deaths have been taking place due to road accidents and huge amounts running into hundreds of crores of rupees have been earmarked for road safety but the amounts are not being spent properly. The insurance companies spend an amount of more than Rs. 10,000 crores by way of compensation for deaths, injuries, third party property damage and other damage due to road accidents every year [11, 12]. The Supreme Court of India has said "There was one death almost every three minutes as a result of road accidents. Unfortunately, the legal heirs of half the victims were not compensated (perhaps being unaware of their entitlement). We express our distress at this unfortunate situation and had to remind all concerned that we were not dealing with an adversarial issue but public interest litigation

for the benefit of the common man particularly for the victims of road accidents and their legal heirs [13]."

Conclusion

Isolated musculoskeletal trauma is rarely life threatening. Proper first aid, rapid transport to a proper hospital should be quick & simple procedures should be carried out to alleviate pain, prevent further damage giving immobilisation & pain relief to the patients. After this retrospective study we have come to know about the increasing trends in number of road traffic accidents. About 80% people are of 20-40 years age group, the bread winners of the family. Hence creating awareness about obeying traffic rules can help in reduction of road accidents. Avoiding consumption of alcohol during or before driving can improve the prevention of vehicular accidents as they are a major cause of accidents according to the study.

References

1. Global plan for the decade of action for road safety 2011-2012. Geneva, World Health Organization, 2012.
2. Global status report on road safety: time for action. Geneva, World Health Organization, 2009.
3. The characteristics of fatal crashes during the Christmas/New Year holiday period. ATSB Research and Analysis Report, Road Safety. Canberra, Australian Transport SafetyBureau, 2006.
4. Digests of road transport and road accident statistics-2003. Mauritius, Central Statistics Office, 2004.
5. Cejun L, Chou LC, Dennis U. Trend and pattern analysis of highway crash fatality by month and day. Washington DC, National Center for Statistics and Analysis, 2005.
6. Ramadan advisory. Karachi, Jinnah Postgraduate Medical Centre, Road Traffic Injury Research & Prevention Centre, 2010.
7. Sreedharan J, Muttappillymyalil J, Divakaran B. Determinants of safety helmet use among motorcyclists in Kerala. Journal of Injury and Violence Research. 2010; 2:49-54.
8. Gururaj G. Road traffic deaths, injuries and disabilities in India: current scenario. National Medical Journal of India. 2008; 21:14-20.
9. Singh YN, Bairagi KK, Das KC. An epidemiological study of road traffic accident victims in medicolegal autopsies. Journal of Indian Academy of Forensic Medicine. 2005; 27:166-169.
10. Pathak A, Desania NL, Verma R. Profile of road traffic accidents and head injury in Jaipur (Rajasthan). Journal of Indian Academy of Forensic Medicine. 2008, 30:6-9.
11. Road safety audit submitted to International Conference on Road Safety and Simulation, Indianapolis, USA, 2011; 14-16.
12. Road Accident of India Survey, 2009.
13. Integrated Disease Surveillance Project. Medical Officers Manual. Government of India, Directorate General of Health Services, Ministry of Health and Family Welfare, 2005. [Last cited on 2012 May 23]. Available from: http://www.nvbdcpchd.gov.in/reporting%20formats/Mo Manual.pdf.
14. Gopalakrishnan S. A Public Health Perspective of Road Traffic Accidents, J Family Med Prim Care. 2012; 1(2):144-150. Doi: 10.4103/2249-4863.104987 PMCID: PMC3893966