

Original article:

Assessment of pattern of road traffic accident cases

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Abstract:

Aim: To assess pattern of road traffic accident cases.

Methodology: One hundred fifty victims for post-mortem were included in this prospective study. All relative data was obtained from case papers, inquest reports and from interviewing relatives and friends of deceased. Data such as age & sex, status of victim, type of offending vehicle, body region involved and cause of death was recorded.

Results: Age group (years) 11-20 years had 8 males and 3 females, 21-30 years had 12 males and 7 females, 31-40 years had 25 males and 13 females, 41-50 years had 27 males and 20 females and >50 years had 18 males and 17 females. Region involved was thorax in 22%, abdomen in 10%, head and neck in 48% and extremity in 20%. Status of victim was motor cyclist in 45%, pedal cyclist in 21%, pedestrians in 12%, light motor vehicle in 9% and heavy motor vehicle in 13%. Offending vehicle was motor cycle in 34%, fall from a moving vehicle in 11%, light motor vehicle in 12%, medium motor vehicle in 23% and heavy motor vehicle in 20%. The cause of death was head injury in 62%, hemorrhagic shock in 20%, spine injury in 14% and others in 4%.

Conclusion: Maximum cases were recorded in males and offending vehicle was motor cycle and common site was head injury.

Key words: motor cycle, road traffic accident, hemorrhagic shock, light motor vehicle

Introduction

Among all traffic accident, road traffic accidents are the most serious problem worldwide. During 1990s road traffic accident injuries ranked 9th among the leading causes of deaths universally.¹ India has one of the largest highway and road network 2nd only to road network of U.S.A. In an estimation till 2050, 267 million vehicles will be on Indian roads. It is reported that 10% of world RTA occur in India.² The latest annual statistics indicate over 80,000 are killed on Indian roads. An estimate of 3 lakhs people sustains injuries every year. If current trends continue number of people killed and injured on roads will rise more than 60% between 2000 and 2022.³

Most commonly affected road users are pedestrians, passengers and cyclists as opposed to drivers who are involved in most of the deaths and disabilities. This epidemic targeting the young and productive generations is likely to take a heavy burden on the quality of life and socioeconomic growth of the region.⁴ World Health Organization (WHO) in its international conference on RTA noted the importance of adequate data on traffic injuries.⁵ Indeed, accurate estimates of the public health burden of RTA can establish the priority of this public health problem, and provide a rational basis for policy decisions.⁶ Considering this, we attempted present study to assess pattern of road traffic accident cases.

Methodology

One hundred fifty victims who lost their life and whose bodies were received in the forensic medicine department for post-mortem were included in this prospective study. Ethical approval for the study was obtained before starting the study.

All relative data was obtained from case papers, inquest reports and from interviewing relatives and friends of deceased. Data such as age & sex, status of victim, type of offending vehicle, body region involved and cause of death was recorded. The data thus obtained was analyzed and assessed statistically. P value less than 0.05 was considered significant.

Results

Table I Age and gender wise distribution

Age group (years)	Male	Female	P value
11-20	8	3	<0.05
21-30	12	7	
31-40	25	13	
41-50	27	20	
>50	18	17	
Total	90	60	

Age group (years) 11-20 years had 8 males and 3 females, 21-30 years had 12 males and 7 females, 31-40 years had 25 males and 13 females, 41-50 years had 27 males and 20 females and >50 years had 18 males and 17 females. The difference was significant (P< 0.05) (Table I).

Table II Assessment of body region involved

Region	Percentage	P value
Thorax	22%	<0.05
Abdomen	10%	
Head and neck	48%	
extremity	20%	

Region involved was thorax in 22%, abdomen in 10%, head and neck in 48% and extremity in 20%. The difference was significant (P< 0.05) (Table II, graph I).

Graph I Assessment of body region involved

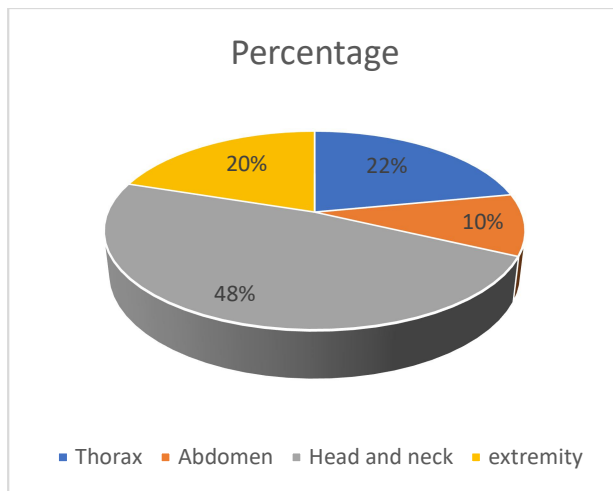


Table III Evaluation of status of the victim

Status	Percentage	P value
Motor cyclist	45%	<0.05
Pedal cyclist	21%	
Pedestrians	12%	
Light motor vehicle	9%	
Heavy motor vehicle	13%	

Status of victim was motor cyclist in 45%, pedal cyclist in 21%, pedestrians in 12%, light motor vehicle in 9% and heavy motor vehicle in 13%. The difference was significant ($P < 0.05$) (Table III, graph II).

Graph II Evaluation of status of the victim

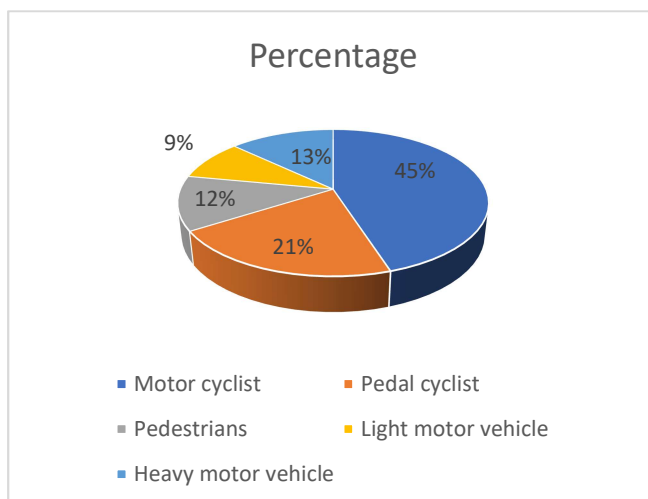


Table IV Assessment of other parameters

Parameters	Variables	Percentage	P value
Offending vehicle	Motor cycle	34%	>0.05
	Fall from a moving vehicle	11%	
	Light motor vehicle	12%	
	Medium motor vehicle	23%	
	Heavy motor vehicle	20%	
cause of death	Head injury	62%	<0.05
	Hemorrhagic shock	20%	
	Spine injury	14%	
	others	4%	

Offending vehicle was motor cycle in 34%, fall from a moving vehicle in 11%, light motor vehicle in 12%, medium motor vehicle in 23% and heavy motor vehicle in 20%. The cause of death was head injury in 62%, hemorrhagic shock in 20%, spine injury in 14% and others in 4%. The difference was significant ($P < 0.05$) (Table IV).

Discussion

The Global Status Report by WHO predicted that, by 2030, fatalities from road accidents is predicted to raise one of the major causes of death.⁷ Statistics - 2009 indicates that the road traffic accidents (RTA) were 2.67 per 1000 population, 34% of total injuries and 16.2% of total deaths.^{8,9} Patients with traffic injuries comprised between 13% and 31% of all attendees were related to injuries in hospitals; in some countries 48% of beds were occupied in surgical wards and were also most frequently occupying operation theatres and ICUs.^{10,11} We attempted present study to assess pattern of road traffic accident cases.

Our results showed that age group (years) 11-20 years had 8 males and 3 females, 21-30 years had 12 males and 7 females, 31-40 years had 25 males and 13 females, 41-50 years had 27 males and 20 females and >50 years had 18 males and 17 females. Singh et al¹² reported that the main vulnerable groups in non-fatal road traffic injuries were young adult males, and two-wheeler riders and pedestrians were more at risk.

We found that region involved was thorax in 22%, abdomen in 10%, head and neck in 48% and extremity in 20%. Jirojwant et al¹³ noted cyclic trend in accidents, with more incidence around weekends and after sunset to midnight. The implications for a prevention policy based on these findings are wider pavements, zebra / underground crossings at busy places for pedestrians, and enforcement of the helmet rule for two-wheeler riders. The practice of compulsorily wearing helmets by two wheelers riders and pillions has lagged far behind the theory.

Our results showed that status of victim was motor cyclist in 45%, pedal cyclist in 21%, pedestrians in 12%, light motor vehicle in 9% and heavy motor vehicle in 13%. Gururaj et al¹⁴ found that road traffic accidents in India has brought out that a majority of the victims are young adults, with a male-to-female ratio of 4:1 to 5:1. Pedestrians and two wheeler / pillion riders are the most vulnerable group in road traffic accidents. A large number of road users in India are pedestrians, two-wheeler riders, and cyclists- vulnerable road users (VRUs).

Offending vehicle was motor cycle in 34%, fall from a moving vehicle in 11%, light motor vehicle in 12%, medium motor vehicle in 23% and heavy motor vehicle in 20%. The cause of death was head injury in

62%, hemorrhagic shock in 20%, spine injury in 14% and others-in 4%. Jha et al¹⁵ evaluated the cases of RTA which included 48 cases of RTA. Out of 48 cases of RTA, (77.08%) cases were males and (22.92%) cases were females. Majority of the victims (54.17%) who died due to road traffic injuries were a motor cycle (two-wheeler) occupants. Most common offending vehicle involved in road traffic accidents was heavy motor vehicle (41.67%) cases. Most common body region involved was head and neck in (43.75%) cases. In majority of cases (45.83%) cause of death was due to head injury.

Odero et al¹⁶ established the extent of alcohol involvement in motor vehicle crashes. Blood alcohol concentration (BAC) was evaluated either by breath tests or venous blood sample analysis in consenting casualties presenting within 10 hours of the crash. Of the 188 patients evaluated, 23.4% were BAC positive and 12.2% were intoxicated. Males were twice as likely as females to have been drinking prior to the crash (26.4% versus 13.6%; $p = 0.08$). Significantly greater proportions of night-time and weekend crashes involved intoxicated subjects ($p = 0.02$ and $p = 0.03$, respectively). Motor vehicle drivers were the most affected by alcohol (60%), whereas pedestrians (33.3%), passengers (16%) and pedal cyclists (8.3%) were involved to a lesser extent. In comparison to passengers, drivers were eight times more likely to have been drinking.

Conclusion

Maximum cases were recorded in males and offending vehicle was motor cycle and common site was head injury.

References

1. Patil SS, Kakade R, Durgawale P, Kakade S. Pattern of road traffic injuries: A study from Western Maharashtra. *Indian J Community Med* 2008;33:56-7.
2. Gharepure PV, Jhala CI, Nair MB. Accidents. *Ind. J Ned Sci* 1959;13(3):232.
3. RaviKiran E, Saralaya KM, Vijaya K. Prospective study on Road Traffic Accidents. *JPAFMAT* 2004;4:12-6.
4. Chalya PL, Mabula JB, Dass RM. Injury characteristics and outcome of road traffic crash victims at Bugando Medical Centre in North western Tanzania. *J Trauma Manag Outcomes* 2012;6(1).
5. Nantulya VM, Reich MR. The neglected epidemic: Road traffic injuries in developing countries. [Last cited 2011 June 27]; *BMJ*. 2002 324:1139-41
6. Accidental Deaths and Suicides in India – 2010. National Crime Records Bureau. Ministry of Home Affairs. Government of India. [Last cited 2012 April 16].
7. Odero W, Garner P, Zwi A. Road traffic injuries in developing countries: A comparative review of epidemiological studies. *TMIH* 1997;2:445-60.
8. Verma PK, Tewari KN. Epidemiology of road traffic injuries in Delhi: Result of a survey, Regional Health Forum WHO SouthEast Asia Region; 2004. p. 8.
9. Mishra BN. Study of epidemiological aspects of RTA cases admitted to S.C.B. Medical College, Cuttack (Thesis), S. C. B. Medical College, Dept of PSM, Orissa, India.
10. Bener A, Breger A, Al-Falasi AS. Risk-taking behavior in road traffic accidents. *J Traffic Med* 1994;22:67-70.
11. Gopalakrishnan, S. A public health perspective of road traffic accidents. *Journal of family medicine and primary care* 2012;1(2):144.
12. Singh A, Goel A, Sekhar Epidemiological Study of non-fatal road traffic accidents in Rohilkhand Region. *Medico-Legal Update*. 2011;11(1):5-9.

13. Jirojwong S, Rudtanasudjatam K, Watcharavitoon P, Sathitsathien W, Sangjun S. Non-fatal injuries sustained in road traffic accidents: A pilot study in provincial hospitals in Chon Buri, Thailand. *Southeast Asian J Trop Med Public Health*. 2002;33:193–200.
14. Gururaj G. Road traffic deaths, injuries and disabilities in India: Current scenario. *Natl Med J India*. 2008;21:14–20.
15. Jha N, Srinivasa DK, Gautam R, Jagdish S. Epidemiological study of Road Traffic Accident cases: A study from South India. *Indian J Community Med*. 2004;29(1):20-4.
16. Odero W. Alcohol-related road traffic injuries in Eldoret, Kenya. *East Afr Med J* 1998;75:708-7