

EPIDEMIOLOGY OF FATAL ACCIDENTS IN CENTRAL INDIA

Surgery

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Abstract:

Introduction: Accidents are results of the reaction of man to his environment. This increasing morbidity and mortality rate, particularly in those of working age group, has devastating consequences for the economic growth of countries. The present study was undertaken to study the factors involved in accidents as well as elucidate the pattern of injuries sustained.

Case study: Retrospective study was conducted at a tertiary care hospital for a period of one year. All the cases of accidents which got admitted during this period were consecutively enrolled in the study after an informed consent.

Result: A total of 16787 cases were admitted in the surgical ward and out of which 1597 (9.5%) were accident cases. Total no of fatal accidents were 142(8.9%) cases. Fatal accidents were more common amongst male (83.8%), age group 21-30 years. The most common cause of death was head injury.

Conclusion: Younger male shows the maximum susceptibility. Road traffic accidents are the most common mode of accidents with head injury as the most common presentation and intracranial bleed as cause of death. Alleviation of such agony needs implementation of traffic rules, active participation of paramedical staff and well equipped high dependency trauma units.

Keywords: Epidemiology, Fatal Accidents, Central India

Introduction

Accidents are results of the reaction of man to his environment. Every moment the accident susceptibility of individual changes and is dependent on variety of factors. Road traffic accidents are one of the leading causes of morbidity and mortality worldwide, accounting for over one million deaths per year. Road traffic accidents (RTA) are defined as a collision involving at least one vehicle in motion on a public or private road that results in at least one person being injured or killed. They also have a huge impact on disability-

adjusted life years (DALYs).¹ It has been predicted that by 2020 global death rates from road traffic accidents will rise by 67% due to the effect of rapid population growth, industrialization and an increase in road vehicles. The World Health Organization predicts that road traffic injuries would become the sixth commonest cause of death by the year 2020 and the fifth by 2030.²

This increasing morbidity and mortality rate, particularly in those of working age group, has devastating consequences for the economic growth of countries. Of the worldwide annual average of 700,000 road

accidents, 10% occur in India. Over 100,000 people are killed on Indian roads annually. By 2020 it is estimated that road traffic accidents would have its fatal effect on about 55,0000 people annually.³ The incidence and prevalence of road RTA is well studied but other form like fall, machine related, blast injuries and natural calamities has only limited literature. The present study was undertaken to study the factors involved in accidents as well as elucidate the pattern of injuries sustained.

Material And Methods

A retrospective study was conducted at a tertiary care hospital for a period of one year. All the cases of accidents which got admitted during this period were consecutively enrolled in the study after an informed consent. The cases belong to either sex of all age groups. All the cases with a history of RTA, fall from height, blast injuries, machine related and natural calamities were included in the study. All homicidal, suicidal and accidental burning cases were excluded. The case records of all those fulfilling the inclusion criteria were reviewed. The demographic data, history of presentation, complaints, type of accident and injury were recorded. The morbidity in form of part of body affected along with the cause of mortality was reviewed. The study adheres to the tenets of Declaration of Helsinki. Data was collected after written informed consent from the patient or legal guardian of the patient. Statistical analyses were performed using Statistical Package for the Social Sciences software (Version SPSS 22.0/ IBM,Chicago,USA). Data were analyzed with appropriate statistical indices.

Results

A total of 16787 cases were admitted in the surgical ward and out of which 1597 (9.5%) were accident cases. Total no of fatal accidents were 142(8.9%) cases. Table 1 shows the age and genderwise distribution of cases of fatal accidents. Fatal accidents were more common amongst male (83.8%), age group 21-30 years and rare amongst those more than 60 years.

Age (Years)	Male	Female	Total
0-10	14	08	22 (15.5%)
11-20	22	07	29 (20.4%)

21-30	35	02	37 (26.1%)
31-40	24	03	27 (19.0%)
41-50	14	03	17 (11.9%)
51-60	06	01	07 (4.9%)
Above 60	03	00	03 (2.1%)

Table 1: Age and Gender wise Distribution

Most of the cases 73.9% belonged to rural areas, laborers followed by the farmers were mainly affected and roads were the main site of such accidents 60.6%. On looking at the seasonal trend fatal accidents were more common during summers 60%. Road traffic motor vehicular accidents 47.2% and fall from height 45.7% were the most common mode of accidents. Maximum number of cases 48.5% reached to the hospital within 0-4 hours of accident, with poor survival time for 34.5% cases upto 6hours only. The most common cause of death was head injury clinically 68.3% and confirmed in 60.6% on postmortem examination. Table 2 summarizes the determinants of fatal accidents in the study population.

	NUMBER OF CASES AREA WISE DISTRIBUTION	PERCENTAGE (%)
Rural	105	73.9
Urban	25	17.6
Unknown	12	8.5
SITE OF ACCIDENT		
On road	86	60.6
At work place	36	25.4
At home	20	14.0
OCCUPATION		
Labourer	45	31.7
Farmer	29	20.4
Student	15	10.6
Non-govtservent	10	7.0
Government servent	9	6.3
Businessman	4	2.8
Driver	2	1.4
Housewife	6	4.2
Others	22	15.5
SEASONAL VARIATION		
Summer (mar-june)	77	60
Rainy (july-oct)	33	27
Winter (nov-feb)	32	23
MODE OF INURY		

Motor vehicle	67	47.2
Fall from height	65	45.7
Blast injury	5	3.5
Machine	1	0.7
Natural calamity	1	0.7
Not known	3	2.1
TIME LAPSE BETWEEN SUSTAINING ACCIDENT AND ADMISSION TO MEDICAL CARE		
0-4 hrs	69	48.5
4-8hrs	30	21.1
8-24hrs	25	17.6
24-72hrs	7	4.9
More than 72hrs	5	3.5
Not available	6	4.2
SURVIVAL TIME AFTER ADMISSION		
0-6hrs	49	34.5
6-12hrs	14	9.9
12-24hrs	20	14.1
24-48hrs	21	14.8
2-7days	19	13.4
8-15days	11	7.7
16-30 days	5	3.5
More than 1 month	3	2.1
ORGAN SYSTEM INVOLVEMENT		
Head injury	97	68.3
Multiple organs	27	19.0
Abdominal	10	7.0
Thoracic	4	2.8
Pelvic	2	1.4
Limbs	2	1.4
POSTMORTEM EXAMINATION FINDINGS		
Intracranial hemorrhage	86	60.6
Intra-abdominal hemorrhage	23	16.2
Multiple injuries	21	14.8
Intra thoracic hemorrhage	7	4.9
Shock	3	2.1
Septicemia	2	1.4

Table 2: Determinants of fatal accidents

Discussion

The incidence of accident cases in our tertiary care hospital was 9.5% and that of fatal accidents was 8.9%. The commonest age group affected in the present series was in the age group of 21-30 years which accounted for 26% of total fatal accidents. Next order was 11-20 years; these two

groups fall a little less than half of total cases. Khorrami et al and Pathak et al also quoted the same findings.⁴⁻⁶ In developed countries most of the deaths were in age group of 15-24 years, this may be as more freedom is granted to younger generation in such countries than ours.⁷ In the present series males (83.8%) were more commonly affected than females (16.2%) many other researchers also reported similar findings in their series.⁴⁻⁶ As ours is a male dominated society and they bear the burden of earning hence expose themselves more to such accidents.

In the present study above 2/3rd cases (73.9%) belonged to rural population and majority (60.6%) were on road site this can be attributed to lower literacy and knowledge of traffic and road safety rules in such population. On looking at the literature this incidence is quite higher as reported by researchers and health statistics of India.^{8,11,12} This can be attributed to increased vehicular traffic, defective construction, poor road maintenance along with ignorance and violation of traffic rules by younger population. Further analysis according to occupation showed that laborer and farmers contributed for more than 50% cases of fatal accidents. On the contrary the drivers constituted only 1.4% case. This can be attributed to either absconding of driver in an attempt to save themselves just before the occurrence of accident or the fact that they may have succumb to injuries and hence no question of reporting to hospital. There is a significant variation in accidental death, peak in summers followed by rainy and winter season. Luther et al also reported similar findings in their study.^{8,9} This seasonal variation can be attributed to the vacation in institutions and harvesting as the mobility of population increases due to these factors.

In regard to the mode of injury motor vehicular accidents and fall from height had similar incidence. In contrary to this have reported fall from height as the major mode of fatal accidents.^{7,9,10} Since these studies were carried out in urban area, where the road traffic is much better and safer in comparison to the present study area the difference in incidence can be attributed to this factor.

The maximum number of fatal accident cases reported to the hospital within 4 hours of the incident. This indicates the severity of these accidents. Majority (58.5%) of fatal accident cases died within first 24 hours of admission to the hospital, indicating the severity of injury sustained. Similar findings were reported by several authors also.^{6,11,12} Head was the most common part affected followed by

multiple injuries and abdominal injuries. In contrast to this few reported lower incidence of head trauma in his study conducted in urban area.^{9,10} This difference can be attributed to the non use of any preventive methods like helmets and seat belts in our study population, which are compulsory in urban areas.

On post mortem examination intracranial hemorrhage was most common finding followed by intra-abdominal hemorrhage and multiple injuries. Many studies have also reported similar finding, that the head injury with intracranial bleed was most common cause of death.^{4-6,13} The present series which included only fatal cases have analyzed the demographic pattern, determinants and cause of death.

Conclusion

The incidence of fatal accidents is increasing every year. Younger male shows the maximum susceptibility. Fatal accidents are more common in summer season and in rural population like farmers and laborers. Road traffic accidents are the most common mode of accidents with head injury as the most common presentation and intracranial bleed as cause of death.

Accidents pose the greatest threat, not only because of toll but also it causes disability deformity loss and agony. Alleviation of such agony needs implementation of traffic rules, active participation of paramedical staff and well equipped high dependency trauma units.

References

1. Geneva: 1995. Prevention, Critical Care and Rehabilitation of Neurotrauma—Perspectives and Future Strategies.
2. WHO. World Health Organization; Geneva: 2004. World Report on Road Traffic Injury Prevention: Summary; 1–52.
3. Hans V. H., Ake N., Ake A E. Springer-Verlag Publishers; Germany: 1997. Transportation, Traffic Safety and Health; 9–10
4. Khorrami Z, HashemiNazari SS, Ghadirzadeh MR. An Epidemiology study of deaths from road traffic accidents. *J SafPromotInj Prev.* 2016; 4(4): 217-24.
5. . Trivedi C R., Sheth R D. Epidemiology of fatal accidents. *IndJ. Surg* 1981;1;171-4
6. Pathak S.M., Jindal A.K., Verma A.K, Mahen A. An epidemiological study of road traffic accident cases admitted in a tertiary care hospital. *Med J Armed Forces India.* 2014 Jan; 70(1): 32–35.
7. Gopaul C D, Gopaul A S, Sutherland J M, Rostant L, Ebi K L, Chadee D D. The Epidemiology of Fatal road traffic Collisions in Trinidad and Tobago, West Indies (2000–2011) *Glob Health Action.* 2016; 9: 10.3402
8. Kalaiselvan G, Dongre AR, Mahalakshmy T. Epidemiology of injury in rural Pondicherry, India. *J Inj Violence Res.* 2011 Jul;3(2):62-7.
9. Barrimah I, Midhet F, Sharaf F. Epidemiology of Road Traffic Injuries in Qassim Region, Saudi Arabia: Consistency of Police and Health Data. *Int J Health Sci.* 2012; 6(1): 31–41
10. Mishra B, Sinha N D, Sukhla S K, Sinha A K. Epidemiological Study of Road Traffic Accident Cases from Western Nepal *Indian J Community Med.* 2010 Jan; 35(1): 115–121.
11. Garg N, Hyder AA. Road traffic injuries in India: a review of the literature. *Scand J Public Health.* 2006;34(1):100-9
12. Gururaj G. Road traffic deaths, injuries and disabilities in India: current scenario. *Natl Med J India.* 2008;21(1):14-20.
13. Kalaiivani A, Mani G, Danasekaran R. Recurring tragedy of road traffic accidents in India: Challenges and opportunities. *Indian J Crit Care Med.* 2015; 19(7): 434–5