Research Article

Profile of Road Traffic Accident cases in a Tertiary care Hospital, Puducherry

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Abstract

Introduction: Road traffic accidents are one of the major causes of death in developed as well as developing countries. India accounts for about 10% of road accident fatalities worldwide and more deaths are recorded due to traffic crashes than due to cardiovascular diseases or neoplasms. A very high number of road traffic accidents were reported in rural Puducherry and Areas around Puducherry such as Cuddalore and Villupuram. **Materials and methods:** The present study was a done in the casualty, Sri Manakula Vinayagar Medical College and Hospital, Puducherry. The Study included 781 Cases of Road Traffic Accident victims. The basic information's like name, age are obtained followed by History of the accident Regarding, time, day, date, type of road, type of vehicle, road user status of the victim were collected. A meticulous clinical examination of injuries was done and the type, site, size and other features of the injuries were noted. **Results:** The majority of road traffic accident victims were male comprising of 85.02% and the male: female ratio is 6.67: 1.The age group commonly involved in accidents in both the sexes is 20-29 years (34%and21.4%).Accidents are more on Sundays (15.5%). Most of the accidents happen in the evening hours (44.6%). Accidents are more during the month of November (10.2%). Most of the accidents happen on semi urban tar roads (85.8). Two wheelers are the most common vehicles involving in accidents (41.3).The percentage of alcohol users involved in accidents is 16.1%. Head injury is the most common site to be injured (24%).Abrasion is the commonest type of injury (41.3%). A reasonable reduction in the number of accidents and injuries resulting from them can be achieved by making certain road safety measures. **Conclusion:** Awareness and health education regarding various traffic rules to the general population will help in reducing the frequency of road traffic accidents.

Key words: Road traffic accidents; Collision; Injuries.

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INTRODUCTION

Road traffic accidents are one of the major causes of death in developed as well as developing countries.[1] Although, this problem has been addressed in a better way in developed countries but the condition is worsening day by day in developing countries. Worldwide the number of people killed by road traffic accidents each year is estimated at almost 2.4 million and injured may be high as 50 million. Road traffic injuries are one of the top three causes of death for people aged between 5 and 44 years and more people died due to road accidents in India than anywhere else in the world as reported by World health organisation.[2] India accounts for about 10% of road accident fatalities worldwide and more deaths are recorded due to traffic crashes than due to cardiovascular diseases or neoplasms.[3] A very high number of road traffic accidents were reported in rural Puducherry area.[4] Areas around Puducherry such as Cuddalore and Villupuram showed a very high number of road traffic accidents during the year 2013.[5] The very high number of road traffic accidents present days is found to be due to rapid rise in vehicle density on roads, poor adherence to traffic rules and regulations, poorly maintained and congested roads. In spite of the advancement of technology and medical sciences, death and deformity following road traffic accidents is yet to be

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controlled successfully. The main aim of this study is to analyse the pattern of non-fatal injuries among road traffic accident victims reporting to Sri ManakulaVinayagar Medical College and Hospital casualty during the study period.

OBJECTIVES

1. To study the pattern and location of injuries in the victim involved in Road Traffic Accidents**.**
2. To identify the type of vehicles and road involved in the accident.
3. To know some host factors like age, sex and road user status.
4. To identify some environmental factors like day, time and month of the accident.

MATERIALS AND METHODS

The study titled "A Study of Road Traffic Accident Cases at SMVMCH, Puducherry" was conducted in departments of casualty and Forensic Medicine, Sri ManakulaVinayagar Medical College and Hospital, Puducherry. This study was conducted for a period of one year from May 2013 to June 2014.

Ethical Clearance

The Study is started only after Obtaining Ethical Clearance from the Institutional Ethical Committee.

Study Setting

Departments of Casualty and Forensic Medicine, Sri ManakulaVinayagar Medical College and Hospital, Puducherry.

Study design: Hospital based Descriptive study.

Sample and sample size: Total number of 1623 cases were reported to the Casualty of Sri ManakulaVinayagar Medical College and Hospital, Puducherryas Road Traffic Accident cases from June 2013 to May 2014.Thereby road traffic accident cases accounts for 43% of all Medico-legal cases reported to casualty. So with this 43% as P, with a Precision of 5%, and a Design Effect of 2, the sample size would be approximately 760. All the cases of Road Traffic Accidents will be taken up for study from June 2013 to May 2014.

Sampling: As all the cases of road traffic accidents during the study period was taken up for study no sampling is involved.

Statistical analysis: Age, sex, type of vehicle involved, common site of injuries, type of injuries and other factors are noted in the proforma. The data is then entered in the computer data base which will be analysed by Epi_ info software version 3.4.3**.**

Inclusion criteria: All Road Traffic Accident cases reported to casualty ofSri ManakulaVinayagar Medical College and Hospital, Puducherry.

Exclusion criteria: Cases of Road Traffic Accident which have been Referred or treated before reporting to Sri ManakulaVinayagar Medical College and Hospital Casualty.

Methodology: As soon as a person injured in a road traffic accident arrives to the casualty initial management of his/ her general condition will be done. Once the person is stabilized, the patient is informed in detail about the study and then the information sheet both in Tamil and English which contains all the information regarding the study will be issued to the patient or relatives. After the consent of the patient or relative the injured person's name, age, sex and two Identification marks are recorded. History about the accident regarding, time, day, month, type of road, type of vehicle, road user status of the victim will be recorded. A meticulous clinical examination of injuries will be done to note the type, site, size and other features of the injuries. All the findings will be recorded in the Proforma.

OBSERVATIONS AND RESULTS

1. **Age and gender wise distribution**

   It is observed from that maximum number of male victims belong to the age group of 20- 29 years .2.4% of male victim were above 70 years. Maximum number of female victims belong to the age group of 20-29 years (21.4%) 6% of female victims were above the age group of 70 years. The majority of the victims are in their second decade of life (32.1%), followed by third decade (21.4%), and the third large group of victims were in their fourth decade of life (15.4%). Only 3% of victims were in their seventh decade of life.

2. **Month wise distribution of road traffic accident cases**

   Highest number of cases were reported during the months of march and November(10.2%). Lowest number of cases was found to be reported during the month of May (5.1%).

3. **Distribution of accident cases by day of the week**

   Majority of accidents took place on Sundays 121 cases (15.5) Least number of accidents took place on Thursday (13.3%).

4. **Distribution of accident cases by time of occurrence**

   Majority of road traffic accidents happened in the evenings from 4pm to 9pm(44.6%). Lowest number of accidents was recorded during night time from 9pm till 5am (15.6%).

5. **Type of vehicle involved in accidents**

   The most common type of vehicle involved in road traffic accident was motorised two wheeler (38.7%), followed by heavy goods vehicle (24.2%).Three

wheeler contributed to about 5.9% of all cases, heavy passenger motor vehicles such as bus and van contributed to about 5.8% of all cases.

6. **Road user status of the victim**

The most common road user involved in a road traffic accident are two wheeler drivers (56.5%). Pedestrians are the next common group of individuals who are getting injured (20.5%),

7. **Alcohol usage by the victims**

Among the total number of 821 road traffic accident cases studied, nearly126 individuals (16.1%) of all the victims have consumed alcohol.

8. **Types of mechanical injury produced**

Among the 781 cases of Road Traffic accidents, abrasions were the common type of injuries (42.4%), followed by lacerations (30.0%). The next common type of injury is contusion (14.2%) and fracture was found in 13.4% of cases.

Table 1: Age and Gender wise distribution of cases

Age group in years	Male		Female		Total	
	Freq	%	Freq	%	Freq	%
0-9	25	3.8%	17	14.5%	42	5.4%
10-19	54	8.2%	13	11.1%	67	8.6%
20-29	225	**34.0%**	25	**21.4%**	250	**32.1%**
30-39	149	**22.5%**	15	**15.4%**	167	**21.4%**
40-49	104	**15.7%**	16	**13.7%**	120	**15.4%**
50-59	53	8.0%	14	12.0%	67	8.6%
60-69	36	5.4%	7	6.0%	43	5.5%
>70	18	2.4%	7	6.0%	23	3.0%
Total	**664**	**100.0%**	**117**	**100.0%**	**781**	**100.0%**

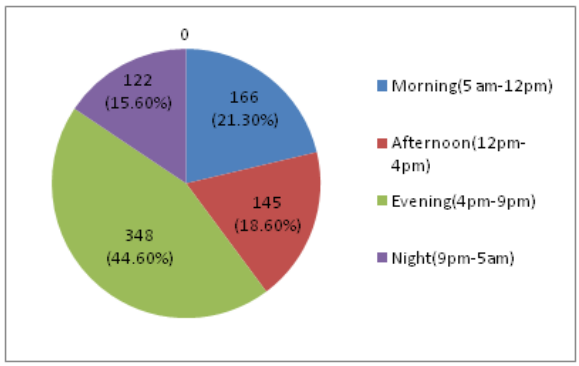

Figure 1: Distribution of accident cases by time of occurrence

Table 2: Type of vehicle involved in accidents

Type of vehicle	No. of cases	Percentage
Motorised two wheeler	302	38.7%
Heavy goods vehicle	189	24.2%
Pedal cycle	185	23.7%
Three wheeler	46	5.9%
Heavy passenger motor vehicle	45	5.8%
Bullock cart	10	1.3%
Light motor vehicle	4	0.5%
Total	**781**	**100.0%**

Table 3: Road user status of the victim

Road users status	No. of cases	Percentage
Pedestrian	160	20.5%
Pedal cyclist	46	5.9%
Two wheeler driver	441	56.5%
Two wheeler pillion	58	7.4%
Three wheeler driver	2	0.3%
Three wheeler occupant	4	0.5%
Bullock cart user	2	0.3%
Car driver	23	2.9%
Car occupant	11	1.4%
Bus/truck driver	4	0.5%
Bus/truck occupant	30	3.8%
Total	**781**	**100.0%**

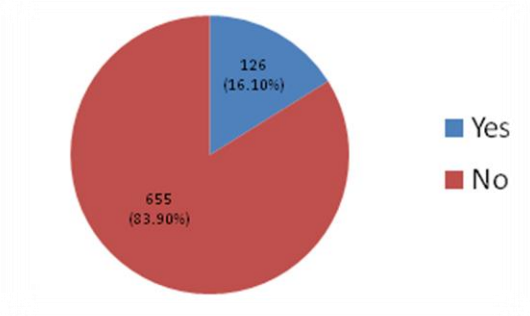

Figure 2: Alcohol usage by the victims

Table 4: Types of mechanical injury produced

Type of injury	No. of cases	Percentage
Abrasion	331	42.4%
Laceration	234	30.0%
Contusion	111	14.2%
Fracture	105	13.4%
Total	**781**	**100.0%**

DISCUSSION

The study on road traffic accident cases was done on 781 cases reported to the casualty of Sri ManakulaVinaygar Medical college Hospital, Puducherry, during the study period of one year. It is observed from this study that out of 781 cases 664 were males (85.01%) and 117 were females (14.98%) and the male female ratio is 6.67:1. The findings of our study also correlates with the study done in eastern Gauhati by Singh YN *et al*. where they observed that the ratio between male and female indulging in road traffic accidents were 7:1.[6] Maximum number of victims belong to the age group of 20- 29 years (34.0%). The findings of our study also correlates with the study done in Agra, Delhi by Kumar A *et al*. where they noted that the common age group of victims involving in road traffic accidents in both the sexes were belonging to the second and third decade of their life.[7] From our study we came to know that the maximum number of cases was reported during the months of

March and November. Similar findings were observed from the study done at Rajkot city by Kyada HC.*et al*. where there is more number of accident cases reported during the month of November as it is the monsoon period in that part of the country.[8] However no exact reasons could be found out for the month wise distribution of road traffic accident cases. In this present study it was observed that majority of accidents took place on Sundays
(15.5%). Correlative findings for some extent is found in a study done in Delhi Safdarjang hospital by Mehta SP, *et al*. Where they showed that maximum number of accident cases were reported on weekends especially Saturdays and lowest number of cases were found to be reported on mondays.[9] The majority of road traffic accidents were reported in the evenings, followed by mornings and afternoons. The above findings can also be correlated with the observations of the national highway traffic safety administration, where there is a peak increase in road traffic accidents in the evenings due to reduced visiblity.[10]The probable reasons quoted are hurrying after work to reach house, intake of alcohol, heavy vehicles travelling in high speed, poor visibility and traffic congession.[11] The findings from our study shows that two wheeler drivers are the most commonest type of road user in the study area (56.5%). Similar findings are observed in studies done in various parts of the country where two wheeler users are the prominent road users followed by pedestrians.[12, 13] The majority of the population in this area depend mainly on two wheelers because of their economic feasibility, easy availability and convenience of driving from one place to another. In this study out of the total number of road traffic accident cases studied nearly 16.1% of all the victims have consumed alcohol (Figure no: V). No analytical methods or laboratory investigations were done to find out the usage of alcohol. Alcohol consumption by the driver is elicited only by four variables such as smell of alcohol, slurring of speech, gait disturbances and eye signs. The findings observed in our study correlates with a recent study done in other part of Pondicherry, by Slater S *et al*. at Pondicherry institute of medical sciences, where they found out that 14.9% of subjects among their total number of 1250 victims have consumed alcohol where the consumption of alcohol is elicited by questioning the patient and clinical examination.[14] Among the 781 cases of road traffic accidents, abrasions were the common type of injury seen among 42.40% of cases, followed by lacerations (30.0%). Similar findings were observed in a study done from this part of country by Jha N. *Et al*. where abrasions are the most common type of injuries and then lacerations.[15]

CONCLUSIONS

The majority of road traffic accident victims were male comprising of 85.02% and female comprised of only 14.98% and the male: female ratio is 6.67:1.The age group commonly involved in accidents in both the sexes is 20-29 years. Accidents are least common in both male and female above 70 years. Accidents are more during the month of November and March. More number of accidents was reported on Sundays followed by Saturdays and Fridays. Accidents were more in the evening hours. Two wheeler are the most common vehicle involving in accident. 16.1% of the victims were found to have used alcohol on clinical examination. Abrasion is the commonest type of mechanical injury produced.

SUGGESTIONS

Helmet usage by two wheeler users should be made mandatory. Strict law enforcement regarding speed limits and lane discipline. Strict law enforcement regarding alcohol usage on the road. Proper safety measures such as hazard signals, traffic signals, crossway lamps, reflectors, solar powered cats eye's etc. should be installed at places wherever necessary. Speed bumpers should be installed at places wherever necessary and should be removed from places where they cause accidents. Educating school children and education to the public regarding road safety measures by safety authorities, public bodies and nongovernmental organization.

REFERENCES

1. Ganveer GB, Tiwari RR. Injury Pattern Among Non Fatal Road Traffic Accident cases: A cross sectional study in Central India. Indian J med sci. 2005. Jan;59(1):9-12.
2. World Health Organization. World report on road traffic injury prevention. Geneva: WHO; 2010:3-29.
3. Asia Needs To Act on Road Crashes.4th International IRTSD Conference on Road Safety.2009Sep16-17.
4. Kalaiselvan G, Dongre AR, Mahalaksmy T. Epidemiology of Injury in Rural Pondicherry, India. J inj Violence Res. July 2011; 3(2):62-67.
5. Accidents and accidental deaths in Tamil Nadu. www.tnpolice.gov.in/pdfs/cit2012/writeup14_12.pdf. Accessed on 11 March 2014.
6. Singh YN, Bairagi KK, Das KC. An Epidemiological Study of Road Traffic Accident Victims in Medico Legal Autopsies. J Indian Acad Forensic Med. 2005; 27:166–9.
7. Kumar A, Qureshi GU, Aggarwal A, Pandey DR. Profile of Thoracic Injuries with Special Reference to Road Traffic Accidents in Agra. J Indian Acad Forensic Med 1999;21:104–9.
8. Nantulya VM. The Neglected Epidemic: Road Traffic Injuries in Developing Countries. BMJ. 2002 May 11; 324(7346):1139-41.
9. Kagne R.N, Godbole H.V, Borde B.S, Kamble S.R, Kulkarni A.P. Study of Fatal Traffic Accidents at GMCH,Nanded.1997.

10. National Highway Traffic Safety Administration. National Pedestrian Crash Report. http://nhtsa.gov.in. Accessed on March 2014.
11. Traffic Collision. Wikipedia Free Encycl. 2013. Accessed on 2014 July 27.
12. Jha S, Yadav B, Karn A, Aggarwal A, Gautham A. Epidemiological study of fatal head injury in road traffic accident cases: A study from BPKIHS, Dharan. May – Aug 2010;8(2):97-101.
13. Tandle RM, Keoliya AN. Patterns of Head Injuries in Fatal Road Traffic Accidents in A Rural District of Maharashtra – Autopsy Based Study. JIAFM. Jul- Sep. 2011; 33(3):228-231.
14. Slater S, Senthilvel V, Joshima J.A Profile on Road Traffic Accidents in Pududcherry (Union Teritory). IJFMT. Jan- June.2014;8(1):32-4.
15. Jha N, Srinivasa DK, Roy G, Jagdish S. Injury Pattern among Road Traffic Accident Cases: A Study from Soth India. Ind Journal of Com Med. Apr – June 2006; 28(2):85 -90.

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