

Original Research Article

A demographic study on type of accidents, injuries and associated factors, patients attending emergency trauma care at tertiary care teaching hospital

Raja Vikram Prasad*, C. Y. Nandanwar, B. S. Isaac Ebenezer

Department of Community Medicine, Santhiram Medical College, Nandyal, Andhra Pradesh, India

Received: 18 April 2017

Revised: 19 May 2017

Accepted: 20 May 2017

***Correspondence:**

Dr. Raja Vikram Prasad,

E-mail: rajavikramprasad@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Road traffic accidents (RTA) is considered to be among top five cause of concern in with morbidity and mortality with socioeconomic repercussions among developing countries. RTA's are manmade disaster which involves human suffering and socioeconomic costs in terms of premature deaths, injuries, etc. The objective of study was to know the prevalence of various types of accidents, injuries and associated factors.

Methods: This study is prospective observational study, was conducted at Tertiary Care Teaching Hospital, SRMC, A.P. Enrollment of patients were registered in emergency trauma care, included all types of accidents and injuries. Patients were interviewed with the pre-tested proforma. After written informed consent, victims were interviewed and attendants were interviewed where patients were unable to answer which is part of Inclusion criteria in the study. Injuries recorded were graded according to Trauma Index. Other required information was collected from medicolegal records from hospital medical records department.

Results: Total of 153 cases recorded at emergency Trauma care unit, of which males are 135 (88.235%) and females 18 (11.764%). The highest percentage was falling between 20-29 years followed by 30-39, 40-49 years.^{3,4} According to trauma index injuries, Minor were 108 (70.588%) and Major were 45 (20.411%). Of all injuries RTA's were 111 (72.549%), recorded as the major portion.² The injuries were more due to Bikes 51 (45.945%), followed by pedestrians 30 (27.027%) as victims, which took place in the evening and late nights were 93 (60.784%), followed by early mornings were 42 (27.450%).

Conclusions: Conclusions of study showed that males were involved more than females in RTA's falling between 20-49 years. Most of the injuries recorded were minor followed by major injuries from Road Traffic Accidents, which occurred during evenings and late nights. Type of vehicles involved in RTA's was two wheelers followed by pedestrians and people who travelled in share Autos.

Keywords: Accident types, Major or minor injury pattern, Time of accidents, Trauma index, GNP, RTA, Medicolegal records

INTRODUCTION

Road traffic accidents (RTA) is considered to be among top five cause of concern in with morbidity and mortality with socioeconomic repercussions among developing

countries.¹ RTA is 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. Thus RTA is a collision between vehicles, between vehicles and pedestrians,

between vehicles and animals, or between vehicles and geographical or architectural obstacles'. RTA's are manmade disaster which involves human suffering and socioeconomic costs in terms of premature deaths, injuries, etc.²

As the states were bifurcated into Andhra Pradesh and Telangana, 2 years back and there is need for the development of state towards increase in Gross National Product which is accompanied by greater movement of people, goods and transport infrastructure. Therefore laying and widening of roads has become the necessary for the faster growth of Andhra Pradesh. In this process some of the unwanted side-effects present in the form of accidents and injuries reveal as a serious problem. As per WHO, 6,00,000 lives are effected by road traffic accidents every year of which one life is lost every minute following injury every two seconds. Majority of victims are from third world countries.³ Road Traffic Injuries are leading cause of mortality and morbidity among people aged 15-29 years and costs up to 1-3% of Gross National Product of the country.^{4,5}

Objectives

The objective of the study was to know the prevalence of various types of accidents, injuries and associated factors among people attending emergency trauma care.

METHODS

This study is a prospective observational study, was conducted at Tertiary Care Teaching Hospital, SRMC, Andhra Pradesh during January 2017 to March 2017.

Inclusion criteria

Inclusion criteria were all patients who were admitted into emergency trauma care with injuries; patients who gave their consent for admission and treatment were included; patients who were not in position to answer, attendants of the patients were taken in the study.

Exclusion criteria

Exclusion criteria were all the patients who did not give consent were excluded; patients left with against Medical Advice were excluded.

Enrollment of all patients for study, were registered in emergency trauma care who got admitted during 3 months period. Study included all types of accidents and injuries. Patients were interviewed with the pre-tested proforma in the emergency room and in the wards of Santhiram Hospital. After written informed consent was taken, victims were interviewed and if they were not in condition to answer, attendants were interviewed which is part of Inclusion criteria under the study. All types of injuries recorded from victims were graded according to Trauma Index. Other required information was collected

from medicolegal records from hospital medical records department.

RESULTS

Total of 153 cases considered out of all other cases recorded at emergency Trauma care unit during study period. Out of them males are 134 (87.6%), females 19 (12.4%) casualties. The highest percentage of casualties was falling between 20-29 years and next higher values were falling between 30-39, 40-49 years.^{6,7} According to trauma index injuries were divided into Minor injuries were 108 (70.6%), Major injuries were 45 (29.4%). Of all injuries road traffic accidents were 111 (72.5%), the major portion of injuries recorded.⁸ The types of injuries were more due to (two wheelers) bikes 51 (33.3%), followed by injuries recorded from pedestrians 30 (19.6%) as victims. Most of the accidents took place in the evening and late nights were 93 (60.8%), followed by early mornings were 42 (27.5%).

Statistics applied for results in the study is Chi Square Test run by SPSS-24. This showed the p value <0.05 which is accepting the Null Hypothesis and there is a positive correlation between RTAs involving more of males, falling in the age group 20-29 years. The most common RTAs are due to bikes, followed by pedestrians and RTAs were more common during occurring during late evening i.e., 90(96.8%) and early morning. Most of the accidents out of 111 (100%) were 69 (62.16%) minor accidents compared to that of 42 (37.83%) major accidents.

Table 1: Genders involved in road traffic accidents.

Sex	Frequency	Percent
Male	134	87.6
Female	19	12.4
Total	153	100.0

Table 2: Age groups involved in road traffic accidents.

Age (in years)	Frequency	Percent
10-19	21	13.7
20-29	48	31.4
30-39	33	21.6
40-49	33	21.6
50-59	9	5.9
60-69	6	3.9
70-79	3	2.0
Total	153	100.0

Table 3: Types of accidents.

Type of accidents	Frequency	Percent
Minor	108	70.6
Major	45	29.4
Total	153	100.0

Table 4: Nature of accidents.

Nature of accidents	Frequency	Percent
RTAs	111	72.5
Free fall	21	13.7
Violence	6	3.9
Work place	6	3.9
Sports injuries	6	3.9
Electric shock	3	2.0
Total	153	100.0

Table 5: Types of road traffic accidents.

Types of RTAs	Frequency	Percent
Bikes	51	33.3
Pedestrians	30	19.6
Cars	9	5.9
Tractors	18	11.8
Bicycle	3	2.0
other than RTAs	42	27.5
Total	153	100.0

Table 6: Road traffic accidents during AM or PM.

Distribution of Time	Frequency	Percent
A.M	42	27.5
Noon	18	11.8
P.M	93	60.8
Total	153	100.0

Table 7: Nature of accidents* time

	A.M	Noon	P.M	Total
RTAs	15	6	90	111
	35.7%	33.3%	96.8%	72.5%
Free fall	15	6	0	21
	35.7%	33.3%	0.0%	13.7%
Violence	3	0	3	6
	7.1%	0.0%	3.2%	3.9%
Work place	0	6	0	6
	0.0%	33.3%	0.0%	3.9%
Sports injuries	6	0	0	6
	14.3%	0.0%	0.0%	3.9%
Electric shock	3	0	0	3
	7.1%	0.0%	0.0%	2.0%
Total	42	18	93	153
	100%	100%	100%	100%
Chi-Square tests				
	Value	Df	Asymptotic significance (2-sided)	
Pearson Chi-Square	122.513 ^a	10	0.000	
Likelihood ratio	111.980	10	0.000	
N of valid cases	153			

p value is less than 0.05 which shows significant relation between nature of accidents* time.

Table 8: Nature of accidents* type of accidents.

	Minor	Major	Total
RTAs	69	42	111
	63.9%	93.3%	72.5%
Free fall	18	3	21
	16.7%	6.7%	13.7%
Violence	6	0	6
	5.6%	0.0%	3.9%
Work place	6	0	6
	5.6%	0.0%	3.9%
Sports injuries	6	0	6
	5.6%	0.0%	3.9%
Electric shock	3	0	3
	2.8%	0.0%	2.0%
Total	108	45	153
	100.0%	100.0%	100.0%
Chi-Square tests			
	Value	DF	Asymptotic significance (2-sided)
Pearson Chi-Square	14.860 ^a	5	0.011
Likelihood ratio	20.904	5	0.001
N of valid cases	153		

p value is less than 0.05, which shows significant relation between nature of accidents * type of accidents.

Table 9: Nature of accidents* vehicles involved in RTAs.

	Bikes	Pedestrians	Cars	Tractors	bicycle	other than RTAs	Total
RTAs	51	30	9	18	3	0	111
	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	72.5%
Free fall	0	0	0	0	0	21	21
	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	13.7%
Violence	0	0	0	0	0	6	6
	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	3.9%
Work place	0	0	0	0	0	6	6
	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	3.9%
Sports injuries	0	0	0	0	0	6	6
	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	3.9%
Electric shock	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	7.1%	2.0%
Total	51	30	9	18	3	42	153
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chi-Square Tests							
	Value		Df		Asymptotic significance (2-sided)		
Pearson Chi-Square	153.000 ^a		25		0.000		
Likelihood ratio	179.834		25		0.000		
N of valid cases	153						

p value is less than 0.05, which shows significant relation between nature of accidents * vehicles involved in RTAs.

Table 10: Age* type of accidents.

	Minor	Major	Total
10-19 years	15	6	21
	13.9%	13.3%	13.7%
20-29 years	24	24	48
	22.2%	53.3%	31.4%
30-39 years	24	9	33
	22.2%	20.0%	21.6%

40-49 years	27	6	33
	25.0%	13.3%	21.6%
50-59 years	9	0	9
	8.3%	0.0%	5.9%
60-69 years	6	0	6
	5.6%	0.0%	3.9%
70-79 years	3	0	3
	2.8%	0.0%	2.0%
Total	108	45	153
	100.0%	100.0%	100.0%
Chi-Square tests			
	Value	Df	Asymptotic significance (2-sided)
Pearson Chi-Square	19.384 ^a	6	0.004
Likelihood Ratio	23.739	6	0.001
N of Valid Cases	153		

p value is less than 0.05, which shows significant relation between age * type of accidents.

Table 11: Age* vehicles involved in RTAs.

	Bikes	Pedestrians	Cars	Tractors	Bicycle	other than RTAs	Total
10-19 years	6	6	0	0	3	6	21
	11.8%	20.0%	0.0%	0.0%	100.0%	14.3%	13.7%
20-29 years	39	6	3	0	0	0	48
	76.5%	20.0%	33.3%	0.0%	0.0%	0.0%	31.4%
30-39 years	3	15	6	6	0	3	33
	5.9%	50.0%	66.7%	33.3%	0.0%	7.1%	21.6%
40-49 years	3	3	0	12	0	15	33
	5.9%	10.0%	0.0%	66.7%	0.0%	35.7%	21.6%
50-59 years	0	0	0	0	0	9	9
	0.0%	0.0%	0.0%	0.0%	0.0%	21.4%	5.9%
60-69 years	0	0	0	0	0	6	6
	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	3.9%
70-79 years	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	7.1%	2.0%
Total	51	30	9	18	3	42	153
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chi-Square Tests							
	Value		Df		Asymptotic significance (2-sided)		
Pearson Chi-Square	185.174 ^a		30		.000		
Likelihood Ratio	185.428		30		.000		
N of Valid Cases	153						

p value is less than 0.05, which shows significant relation between age * vehicles involved in RTAs.

DISCUSSION

In the present study, due to road traffic accidents are a major problem. The highest recorded injuries were minor constituting to 71% and victims are males falling between 20-49 years which is more when compared with the study conducted by Ruikar et al, showing 51.9% falling between 25-65 years. The RTA injuries were more due to two wheelers were 45.9% and time of accidents were more during evening and late nights which is showing more in percentage compared from National Statistics of RTA.⁹ The major accidents were 29% involving more of males.

This study found accidents were due to poor lighting facility, improper sign boards for directions, no speed breakers, no proper guidance to follow traffic rules which reflects the epidemiological factors (like vehicle, footpath, road condition etc.).¹⁰ Reckless and negligent driving by two wheelers was the main concern. Accidents due to bikes, pedestrians and overcrowd travelling by share autos were the main victims. Accidents were mostly occurring before dawn and after dusk.

The major cause for the accidents were due influence of alcohol. Apart from RTA's, followed by injuries due to free fall, violence, work place, sports injuries and electric shocks. Injuries from RTAs result in tremendous personal

and social loss which can lead to functional, occupational activity impairments, as well as psychological problems diminishing the quality of life.¹¹

The present study has several drawbacks like functional and psychological evaluations which can influence patient's prognosis were not sufficiently conducted. Therefore future investigations to be followed for the association between returned to work and quality of life would be helpful.

CONCLUSION

RTAs are leading causes of morbidity and mortality. Epidemiological factors like condition of road, driver's recklessness, consumption of alcohol, mobile phone usage while driving influence RTAs. The victims will suffer physically, mentally, socially and economically in their future. Immediate necessary changes are required to prevent RTAs. To reduce RTAs necessary public awareness programs should be taken up along with strict measure to follow the traffic rules. Immediate intense road safety Campaign should be organized by all concerned departments in reducing the RTAs.

Recommendations

- Study showed the need for more of proper electric poles, proper guidance with speed limits along with indication of steep curves.
- Zig-Zag barricades and speed control breakers should be placed at required relevant sites to control speeding vehicles.
- As young males were involved in road traffic accidents, due to rash driving without safety measures riding bikes, there is need for following strict safety measures for all two wheelers.
- Need to stop people driving under the influence of alcohol.
- Need for demarcation of separate path for pedestrians.
- Need for good radium glow signs for proper guidance to people moving on reconstruction roads.
- Need for speed control monitoring by concern traffic police.
- Need for continuous audio announcements to educate all, at required places including places like food points and dhabas on road side.
- Need for more round the clock police patrolling on the reconstruction roads regularly.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Mishra B, Sinha ND, Sukhla SK. Epidemiological study of Road Traffic Accident Cases from Western Nepal. *Indian J Community Medicine*. 2010;35(1):115-21.
2. Transport Research Wing, Ministry of Road Transport and highways. Road Accidents in India 2012. New Delhi: Ministry of Road Transport and Highways, Government of India 2015.
3. WHO. Road traffic accidents in developing countries. Technical Report Series No. 73, World Health Organization, Geneva; 1984.
4. United Nations Decade of action for road safety 2011-2020. Available at: <http://www.decadeofaction.org>. Accessed on 3 March 2017.
5. WHO. Road Traffic Injuries Fact Sheet No. 358, March 2013. Available at: <http://www.who.int/mediacentre/factsheets/fs358/en> Accessed on 4 April 2017..
6. Kuchewar SV, Meshram RD, Gadge SJ. Demographic Study and Medico-legal Aspect of Fatal Road Traffic Accident in Aurangabad. *J Life Sci*. 2012;4(1):7-10.
7. Kumar PVS, Srinivasan K. To Study The Socio Demographic Profile Of Road Traffic Accident Victims In District Hospital, Karimnagar. *Int J Res Dev Health*. 2013;1(3):136-40.
8. Mehta SP. An epidemiological study of road traffic accident cases admitted in Safdarjang Hospital, New Delhi. *Indian J Med Res*. 1968;56(4):456-66.
9. Ruikar. National statistics of RTA. *J Orthop Traumatol Rehabilitation*. 2013;6(1).
10. Bhuyan PJ, Ahmed F. Road Traffic Accident: An Emerging Public Health problem in Assam. *Indian J Community Med*. 2013;38(2):100-4.
11. Lee JS, Kim YH, Yun JS, Jung SE, Chae CS, Chung MJ. Characteristics of Patients Injured in Road Traffic Accidents According to the New Injury Severity Score. *Ann Rehabil Med*. 2016;40(2):288-93.

Cite this article as: Prasad RV, Nandanwar CY, Ebenezer BSI. A demographic study on type of accidents, injuries and associated factors, patients attending emergency trauma care at tertiary care teaching hospital. *Int J Community Med Public Health* 2017;4:2457-62.