

## Original Article

# Study of Human Factors, Injuries And Post Accident Events of Road Traffic Accident Victims Admitted At King George Hospital, Visakhapatnam.

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### Abstract

**Introduction** : Globally, 1.3 million people die and another 20-50 million sustain injuries from road accidents every year. Road accidents are 9<sup>th</sup> leading cause of deaths and are estimated to become the 5<sup>th</sup> leading cause of death by 2020. Millions of people every year are admitted in the ICUs after severe crashes and many will never be able to live, work or play as they used to do.

**OBJECTIVES:** To Study the human factors and injuries of the Road Traffic Accident victims.

**Methodology:** A cross sectional Hospital based study was conducted during period of 1<sup>st</sup> October to 31<sup>st</sup> march at King George Hospital (K.G.H), a tertiary care hospital in Visakhapatnam district. A total of 250 road traffic accident victims who admitted during this period were interviewed after obtaining an informed consent.

**Results** : Among the study population, 21.6% admitted that they were under the influence of alcohol prior to the accident and among drivers 35.1% admitted alcohol consumption prior to the time of accident. Helmet usage was very minimal (4.25%) and none of the four wheeler drivers used seat belt. Abrasions were common in upper limb followed by lower limb. Lacerations and fractures were common in the lower limbs. About half of the victims were transported by 108 ambulances. Nearly half of the victims reached hospital within one hour among them only one third of the victims received treatment within one hour of time.

**Key words** : Human Factors, Injuries, Post accident events, Road Traffic Accident, Visakhapatnam.

### Introduction

Andhra Pradesh in the year 2011 recorded 41,066 road accidents out of which 49,542 are injured and 15,158 persons died. The rate of accidental deaths per thousand vehicles is 2.0 in Andhra Pradesh as compared to 1.3 at National level<sup>1</sup>. In Visakhapatnam in the year 2011, number of cases of road accidents reported was 1548 out of which 1286 were injured. Males outnumbered the females with 5:1 ratio. 414 deaths have occurred and nearly 26.7% is the accident severity (Road accident deaths/100 accidents)<sup>2</sup>This explains the rate of accidents is not under control despite of imposing penalties for not following traffic rules

and improved road conditions. This rise can be attributed to lack of awareness on road safety, negligence and least respect for life. Accidents are multifactorial. William Haddon (Head of Road Safety Agency in USA) has pointed out that road accidents were associated with numerous problems like human, vehicle and environmental factors each of which is needed to be addressed separately<sup>3</sup>. Accidents can be studied in terms of agent, host and environmental factors and epidemiologically classified into time, place and person distribution<sup>4</sup>.

### METHODOLOGY:

**STUDY DESIGN:** A cross sectional Hospital based study.

**STUDY SETTING:** King George Hospital, Visakhapatnam.

King George Hospital is a tertiary care 1052 bedded teaching hospital.

**STUDY POPULATION:** Road traffic accident victims who attended King George hospital. Patients due to Road Traffic Accident attending casualty department and in-patients in the departments of orthopedics, surgery, Neuro surgery were included.

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**STUDY PERIOD:** November 2010 to October 2012

A Pilot study was conducted for one month to ascertain the feasibility of the study by using predesigned semi structured questionnaire. Based on the observations, necessary modifications were done in the questionnaire.

**SAMPLE SIZE:** All the 250 road traffic accident victims who attended K.G.H during the period of 1-10-2011 to 31-03-2012 were included in the study.

**INCLUSION CRITERIA:** Patients who attended King George Hospital during the above period due to road traffic accidents which occurred within Greater Visakhapatnam Municipal Corporation limits and who have given consent to participate in the study.

For the purpose of the study, Definition of Road Traffic Accident is "A road traffic accident was defined as accident which took place on road between two or more objects, one of which must be any kind of a moving vehicle."

**EXCLUSION CRITERIA:**

1. Victims brought dead due to Road traffic accident.
2. Victims / accompanying relatives who did not give consent to be a part of the study.

Permission was taken from the Superintendent of the hospital and also from the concerned heads of departments to carry out the study. The patients were approached and explained the purpose of the study in their language .After obtaining informed consent, pre tested questionnaire was administered and information was recorded.

**STUDY TOOL:** Pretested semi-structured questionnaire.

**STUDY VARIABLES:**

Study variables are age, gender, education status, economic status, occupation, personal habits, possession of driving license, place of accident and type of injuries etc .Explanations of some of the study variables were given below.

**STATISTICAL ANALYSIS:** Data was analyzed using SPSS (statistical package for social sciences) trial version 16 and Excel spread sheet .Results were expressed in terms of percentages, means, and proportions and relevant tests of significance were applied and  $P < 0.05$  was considered as statistically significant.

**Results:**

In the present study, males were predominantly involved (78%) than females (22%).The age distribution ranged

from 3 years to 70 years. The median age of our study population was 34 years with 1<sup>st</sup> quartile being 24 years and 3<sup>rd</sup> quartile being 45 years.

Religion wise distribution of the study population showed that maximum of victims were Hindus (87.6%) and 10% were Christians and 1.6% were Muslims. Caste wise distributionshowed that 48.4% of RTA victims belongs to back ward class community, 22.8% were Scheduled Caste and 6 % were Scheduled tribe.

One-sixth (18.4%) who were involved in RTA were illiterates, 23.2% had education up to high school and 14% were graduates. Among the victims, unskilled workers (21.6%) constituted the highest number followed by students (19.2%) and house wives accounted for 12 %.

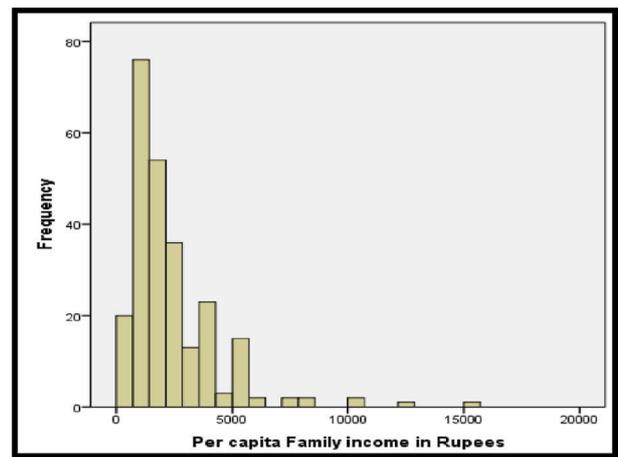


Figure 1: Per Capita Family Income

The range of per capita family income was from Rs 300 to Rs15000, with median income being Rs 1800.Nearly one-third of the population belong to Upper Lower class, 28% belong to Lower middle class.

Table 1: Distribution of Study Population According To Their Personal Habits.

HABITS	FREQUENCY (%)
Smokers	40(20.5)
Chewing smokeless tobacco.	26(13.3)
Alcoholics	68(34.8)
Alcoholics and smokers	32(16.4)

Majority of the interviewed were Alcoholics and Smokers. Among the study population, 21.6% admitted that they were under the influence of alcohol prior to the accident and among drivers 35.1% admitted alcohol consumption prior to the time of accident.

Helmet usage was very minimal in our study .Only four drivers of the motorized two wheelers used helmets and none of the pillion riders used the helmets. The main risk factor for the motorized two wheeler drivers is non-use of helmets andmost of the victims stated that they neglected to wear helmet because they were travelling locally, due to lack of habit of wearing helmet regularly and while some were planning to buy in future.

**Regarding safety belt usage**, none of the 4 wheeler drivers had used safety belt during the accident.

Table 2:Injury pattern among study subjects according to their activity.

Activity of The Injured Person	Type of injury		Total n(%)
	Simple N(%)	Grievous N(%)	
Pedestrian	6(15.3)	33 (84.7 )	39(100)
Driver of The Vehicle	31(24.2)	97(75.8 )	128(100)
Pillion Rider	6(42.8 )	8(57.2 )	14(100)
Passenger	12(17.3 )	57(82.7)	69(100 )
<b>Total</b>	<b>55(22)</b>	<b>195(78)</b>	<b>250(100)</b>

Chi-square value =5.76 P>0.05

The activity of injured person doesn't showed much difference in the type of the injury and most of victims suffered from grievous injuries.

Regarding injuries, multiple injuries involving different parts of the body were seen. Most of the Victims suffered from abrasions (75.2%) and 42.4% sustained fractures. Abrasions, contusions, fractures and laceration were observed in the descending order.

Abrasions were common in upper limb followed by lower limb. Lacerations and fractures were common in the lower limbs .Contusions were more in the head and neck region and none of them used helmets. Abdomen and thorax were less affected when compared to other areas.

Lower limbs were more affected parts as compared to other areas as they were more vulnerable to injuries due to either direct contact with the impacting vehicle or as a result of being crushed.

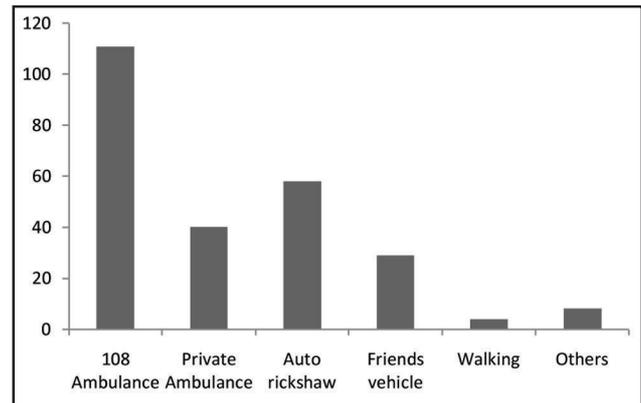


Figure 2: Mode of Transport of study subjects.

Almost half of the study populations (44.4%) were transported by 108 ambulance services to hospital and they provided the pre hospital care.

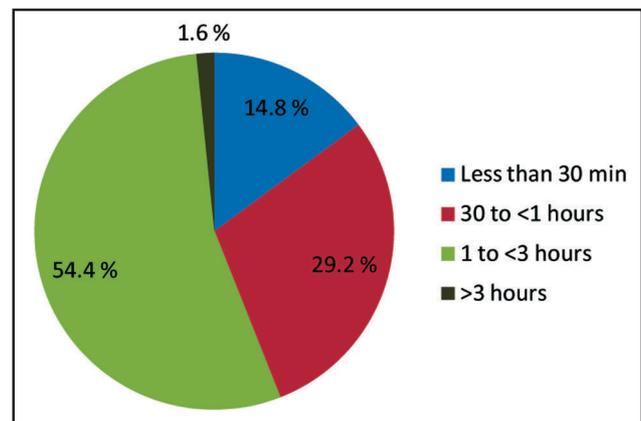


Figure 3:Time interval between Accident and Receiving treatment.

Majority of the victims received pre admission treatment (71.6%) and nearly 44% reached hospital within one hour. Only 16.4 % of the Victims received treatment within one hour of time. The delay is due to traffic on the roads, non-availability of ambulance at nearest accessible areas.

### Discussion:

The findings related to the distribution of cases according to religion were similar to the distribution in the general population according to DLHS-3 data, where Hindus account for 85.8% in Andhra pradesh<sup>5</sup> and a study conducted by Badrinarayan Mishra et al (2010)<sup>6</sup> .Regarding socio economic status One-third of the population belongs to Upper Lower class , 28% belong to Lower middle class whereas in the study conducted by Tiwari RR et al (2008) in Nagpur observed that 27.2% of the study population belonged to upper lower and 49.9% belonged to lower middle economic class<sup>7</sup>. The median value of per capita income being Rs 1800 in the present

study .A study conducted by R Dandona et al (2006) in Hyderabad showed that per capita monthly income was d” Rs 2000 for 41% of respondents and Rs 2001-4000 for 28.2% of respondents <sup>8</sup>. A study conducted by AkhileshPathak et al (2004) in Jaipur showed that 87.17% were not wearing any protective helmets at the time of accident <sup>9</sup>.Fitzharris et al (2009) observed that 70.9% of the two wheeler riders didn’t possess helmet during the accident <sup>10</sup>. Studies have reported that the commonest site for fractures was lower limb.[SupriyaSatishpatil et al (2008) <sup>11</sup>, Geetha R Menon et al (2007) <sup>12</sup> ] whereas Khare N et al (2012) <sup>13</sup> observed that upper limb (21.3%) is more involved than lower limb(13.7%). Chaudhary BL et al (2005) showed that head was the commonest site involved in 53.56% cases, followed by lower limbs in 41.60% cases<sup>14</sup>.

#### Conclusion :

People using two-wheelers were common victims of road traffic accident. Various risk factors like driving under the influence of alcohol, non-usage of helmets and seat belts were established .The distribution of fractures and other injuries in the head and neck region is in compliance with non-usage of helmet. Lacerations and fractures were common in the lower limbs. About half of the victims were transported by 108 ambulances from the site of accident to the hospital.Nearly half of the victims reached hospital within one hour among them only one third of the Victims received treatment within one hour of time.

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