Epidemiological Study of Road Accident Cases Admitted in A Tertiary Care Hospital Bangalore, India

Mohit Sharma,[1] Dr. Mahesh Sharma, [2] Dr. Rajeswary Jindal,[3] and Dr. S. R. Jindal[4]

[1]Physiotherapist, Department of Physical and Rehabilitation, Apollo Hospital Bangalore (Karnataka) India
[2]Principal Specialist Surgery, R. K. Joshi District Hospital, Dausa (Rajasthan) India
[3]Associate Professor, Department of PMR, SMS Medical College, Japur (Rajasthan) India
[4]Senior Specialist Orthopedics, R. K. Joshi District Hospital, Dausa (Rajasthan) India

Abstract— *National Crime Records Beuro (NCRB) reports that more than 135,000 traffic collision-related deaths occur in India every year, which is highest in world. So this study was conducted aimed to study the epidemiology of accidentaly injured cases. So it may help in suggesting some clues about such a high prevalence of death due to road accidents in India. A cross-sectional descriptive observational study was carried out on 199 accidental injured cases admitted in Apollo Hospital Bangalore India. General information regarding socio-demographic data and variables related to accidents were recorded. These data collected were analyzed and inferred with Chi-square test of significance. It was found out that maximum (51.26%) accidental injured admitted cases 20-40 years of age group with male predominance (M:F=3.26). Majority of accidents occurred in night and peak office hours. Majority of victims were two wheeler users and hitting vehicle was bus in majority of cases. Speed of vehicle, alcohol consumption and not using safty devices increases the accidents. So much more precaution to be taken at peak hours and sensitization about traffic rules should be taken care of.*

Key words: Rode Traffic Accidents, Accident Victims, Accidental Injured Cases

1. Introduction

National Crime Records Beuro (NCRB) reports that more than 135,000 traffic collision-related deaths occur in India every year, which is highest in world.[1] World Health Organization also has revealed in its first ever Global Status Report on Road Safety that more people die in road accidents in India than anywhere else in the world, including the more populous China. At least 13 people die every hour in road accidents in the country, the latest report of the National Crime Records Bureau reveals. Road deaths in India registered a sharp 6.1% rise between 2006 and 2007. Calling road fatalities an "epidemic" that will become the world's fifth biggest killer by 2030.[2]

Another published report reveals that in New Delhi, the capital of India, the frequency of traffic collisions is 40 times higher than the rate in London, the capital of the United Kingdom. [3] NCRB report revealed that in India, Andhra Pradesh having the highest share of deaths due to road accidents (12%) followed by Maharashtra and Uttar Pradesh (11% each).[2] And actual number of casualties may be higher than what is documented, as many traffic accidents go unreported and moreover, victims who die some time after the accident, a span of time which may vary from a few hours to several days, are not counted as car accident victims. [1]

International Road Federation (IRF) estimated that traffic collision results in an annual monetary loss of $20 billion (i.e. Rs. 1 Trillion) in year 2012 in India. This figure includes expenses associated with the accident victim like property damage and administration expenses. [4]

So this study was conducted on road accident cases admitted in Apollo Hospital Bangalore with the aim to study the epidemiology of these cases. It may help in suggesting some clues about such a high prevalence of death due to road accidents in India.

2. Methods

A cross-sectional descriptive observational study was carried out on 199 road accident cases admitted in from year 2013-14 in Apollo Hospital Bangalore (Karnataka) India, with the aim to study the epidemiology of these cases.

Admitted cases were interrogated about their socio-demographic data with accidental variable like type of vehicle and speed of vehicle at the time of accident. Along with type of vehicle of injured, information about type of hitting vehicle was also gathered. Status of alcohol consumption and protective devices adopted at the time of accidents along with timing of accidents were also recorded. For inquiring about timing of accident, timing was divided into six group namely early morning i.e. 4 AM to 7.59 AM, Morning office Hours i.e. 8 AM to 11.59 AM, Early Noon i.e. 12 Noon to 2.29 PM, Late Noon i.e. 2.30 PM to 5.29 PM, Evening office Hours i.e. 5.30 PM to 9.29 PM and Night i.e. 9.30 PM to 3.59 AM.

Data thus obtained were entered in MS Excel 2007 worksheet**. T**hese data were classified and analyzed as per the data received. Significance of difference in proportions was inferred by Chi-square test. For significance 'p value' equal or less than 0.05 was considered significant.

3. Results

Out of these 199 road accident victims admitted in hospital, 152 (76.38%) were males whereas 47 (23.62%) were females i.e. predominate males over females with M:F ratio 3.234. (Table 1)

When age wise distribution of these cases were observed it was found that maximum cases were of 20-40 years (i.e. 51.26%) followed by >60 years, <20 years and 40-60 years. Likewise, maximum injured cases were observed of Hindus (i.e. 42.71%) followed by Christian, Sikhs, Muslims and Janies. (Table 1)

Table 1

Socio-demographic variable's-wise Distribution of admitted cases (N=199)

S. No.	Socio-demographic Variables	Admitted	% of Total Admitted
1	**Age-wise Distribution**		
	<20 Years	**23**	**11.56**
	20-40 Years	**102**	**51.26**
	40-60 Years	**18**	**9.05**
	>60 Years	**56**	**28.14**
2	**Sex-wise Distribution**		
	Males	**152**	**76.38**
	Females	**47**	**23.62**
3	**Religion-wise Distribution**		
	Hindu	**85**	**42.71**
	Muslims	**13**	**6.53**

	Sikh	37	18.59
	Christian	56	28.14
	Jainism	8	4.02

It was observed that majority of injured person were on motorcycle at the time of accident (i.e. 35.68%) that followed by on Sccoter, four wheeler and cycle. When speed of vehicle of these cases were inquired it was found that majority (60.3%) of cases were having speed more than 60 Km/hr. (Table 2)

Table 2

Accident Related Variables at the time of Accident-wise Distribution of admitted cases (N=199)

S. No.	Accident Related Variables	Admitted	% Admitted
1	**Type of vehicle Distribution**		
	Cycle	17	8.54
	Motor Cycle	71	35.68
	Scooter	56	28.14
	Four Wheeler	55	27.64
2	**Speed of vehicle-wise Distribution**		
	<40 Km/Hr	32	16.08
	40-60Km/Hr	47	23.62
	>60 Km/Hr	120	60.30
3	**Hitting vehicle-wise Distribution**		
	Motor Cycle	8	4.02
	Car	41	20.60
	Jeep	23	11.56
	Bus	54	27.14
	Truck	42	21.11
	Other	31	15.58
4	**Timing of Accident-wise Distribution**		
	Early Morning	3	1.51
	Morning Office Hours	42	21.11
	Early Noon	19	9.55
	Late Noon	8	4.02
	Evening Office Hours	51	25.63

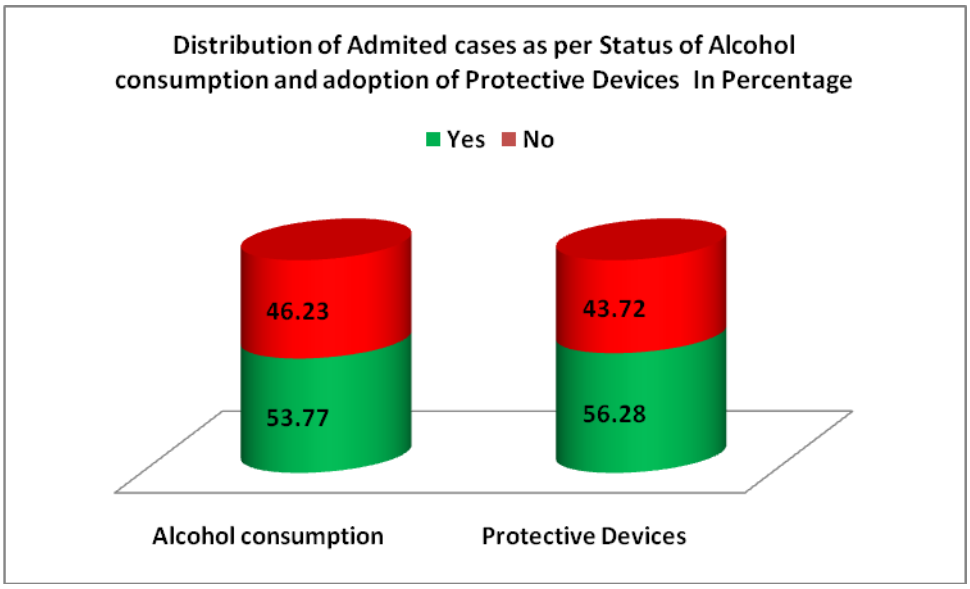
	Night	**76**	**38.19**

Likewise, information about hitting vehicle was gathered it was found that although there was not much difference in type of hitting vehicle ranging from11.56% by Jeep to 27.14% by Bus except motorcycle which is in 4.02% of cases. (Table 2)

When timing of accident was inquired from these injured cases it was found that majority of accidents occurred in night (38.19%), evening office hours and morning office hours. (Table 2)

Alcohol consumption status and adoption of protective devices like helmate seat belt etc at the time of accident was inquired it was found that about half of injured cases admited that they were in effect of alcohol and were not using any protective devices. (Figure 1)

Figure 1



4. Discussion

This present study observed that maximum admitted cases 20-40 years of age group with male predominance. This group is those who are more engaged in outdoor activities and with less patience. This fact is further supported with the observation that least proportion was of persons of 40-60 years of age group.

It was also observed in this study that maximum victims were Hindus (i.e. 42.71%) followed by Christian, Sikhs, Muslims and Janies. This may be because majority of resident of city were Hindus.

It was also found in this study that majority of injured person were on motorcycle at the time of accident (i.e. 35.68%) that followed by on Scooter, four wheeler and cycle. Another report found that more than 40 per cent of these casualties are associated with motorcycles and trucks.[1] The "Global Status Report on Road Safety" also supported these finding that users of motorcycles and motor-powered three wheelers constitute the second largest group of traffic collision deaths.[5] However as this study was conducted in a private tertiary care hospital so users of three wheelers were not able to afford such type of hospital. This may be the reason for this disparity.

This "Global Status Report on Road Safety" report published by WHO reported speed as one of the major cause of accident.[5] Similar observations were observed by this study that majority (60.3%) of cases were having speed more than 60 Km/hr. In 2004, road accident was the top ninth cause of death in 2004. "Speed is the main reason behind accidents. [2] An increase in average speed is directly related to both the likelihood of a crash occurring and to the severity of crash consequences. A 5% increase in average speed leads to an approximately 10% increase in crashes that cause injuries and a 20% increase in fatal crashes.[2]

In present study it was found that although there was not much difference in type of hitting vehicle ranging from11.56% by Jeep to 27.14% by Bus except motorcycle which is in 4.02% of cases. Almost similar was observed in report published by TNN in year 2009 that in contrary to the popular view of trucks being a major killer on roads, the report shows these to be the biggest victims of mishaps - 23,991 occupants of trucks and lorries lost their lives in 2007. This was followed by occupants of two-wheelers. [2]

Majority of accidents of victims were admitted were occurred in night (38.19%), evening office hours and morning office hours in this study. These observations were well supported with another study who reported most accident-prone time on Indian roads is during the peak hours at afternoon and evening.[1]

It was also found in this study that about half of injured cases admitted that they were in effect of alcohol and were not using any protective devices. In resonance with these observations The "Global Status Report on Road Safety" published by WHO identified the major causes of traffic collisions as driving over the speed limit, driving under influence of alcohol and not using helmet and seat belts. [1,5]

The Campaign Against Drunken Driving (CADD) is an organization campaigning against driving under the influence. But this campaign has been ineffective.[1] Harman Singh Siddhu of Arrive Safe, an organization working for improvement in road traffic safety, asserted that a general lack of respect for traffic rules in India is a contributing factor for road accidents.[6] He also has pointed out that although the 2010s was declared by the United Nations as "Decade of Action for Road Safety", no celebration was held in India. [3]

Another published report also pointing to speeding, drinking-driving and low use of helmets, seat belts and child restraints in vehicles as the main contributing factors. A group of Indian Researchers have developed a low-cost device which prevents automobile drivers from receiving or making cell phone calls when at wheel, but allows calls to other passengers in the vehicle.[7] That type of devices may be used.

CONCLUSIONS

It was found out that maximum accidental injured admitted cases were in 20-40 years of age group with male predominance. Majority of accidents occurred in night and peak office hours. Majority of victims were two wheeler users and hitting vehicle was bus in majority of cases. Speed of vehicle, alcohol consumption and not using safety devices increases the accidents. A group of Indian Researchers have developed a low-cost device which prevents automobile drivers from receiving or making cell phone calls when at wheel, but allows calls to other passengers in the vehicle.[7] That type of devices may be used.

REFERENCES

1. Murali Krishnan (29 April 2010). "India has the highest number of road accidents in the world". Deutsche Welle. Retrieved 3 May 2012.
2. Dipak Kumar Dash. India leads world in road deaths: WHO. TNN | Aug 17, 2009 http://timesofindia.indiatimes.com/india/India-leads-world-in-road-deaths-WHO/articleshow/4900415.cms
3. TR Jain, Mukesh Trehan, Ranju Trehan. Indian Economy. FK Publications. p. 457. ISBN 978-81-87140-37-5. Retrieved 3 May 2012.
4. Road accidents cost India $20 bn every year". The Times of India. 19 February 2012. Retrieved 3 May 2012.
5. Global Status Report on Road Safety: Country profiles: India (PDF) (Report). World Health Organization. Retrieved 3 May 2012.
6. "No U-Turn on Indian Road Safety". Harman Singh Siddhu. Retrieved 27 May 2012.
7. "Indian Engineers develop device which jams Cellphones of Car Drivers". IANS. news. biharprabha.com. Retrieved 17 June 2014.