National Journal of Clinical Orthopaedics

ISSN (P): 2521-3466
ISSN (E): 2521-3474

www.orthoresearchjournal.com
2017; 1(3): 01-04
Received: 01-08-2017
Accepted: 02-09-2017

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A study of association of substance abuse and road traffic accidents in a tertiary care centre

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Abstract
Introduction: Road traffic accidents are one of leading causes of death in India. The steadily increasing incidence of road traffic accidents has become a major public health issue. alcohol consumption is one of the most common cause for road traffic accidents according to the World Health Organization (WHO), road traffic injuries are the sixth leading cause of death in India with a greater share of hospitalization, deaths, disabilities and socio-economic losses in the young and middle-aged population. India reported 35.1 accidents per 10000 motor vehicle in 2011, Karnataka is the fourth ranking state in road traffic accidents in India.
Methodology: The study was conducted in victims of road traffic accident brought to tertiary care centre of Adichunchanagiri medical sciences, bg nagara between September 2016 and may 2017 The datas were collected regarding age, sex, nature of injury, educational status, type of vehicle, type of road user, time of incidence, history of alcohol intake, place of consumption.
Results: Totally 1164 victims reported to casualty due to RTA and 442 of them were under the influence of alcohol, of which 33% of accidents were sustained in the age group 21-30 years,31.2% of the subjects had lower limb injury and 24.7% suffered from head injury,18.3% sustained upper limb trauma, 10.8% suffered chest injury, 8.6% were affected by faciomaxillary trauma. It was also observed that 99.09% of the victims were males. Majority of the victims were under educated, (33.03%) were agriculturists, most of the incidents occurred in the evenings 6pm-12 midnight.
Conclusion: This study was carried out to know the involvement of alcohol consumption in road traffic accidents reporting to a tertiary care centre. It showed that most of the victims were males. Majority of the cases (38.2%) belong to the age group 21-30 years. Among the victims 39% were two wheeler drivers, 19% were three wheeler drivers followed by pedestrians (15.4%), four wheeler drivers (13.6%) and pillon riders (13%). Majority of the cases suffered lower limb injury This study clearly correlates the effect of alcohol and drug consumption in road traffic accident.

Keywords: RTA, WHO

Introduction
India has a well-knit and coordinated system of transport which plays an important role in development of economic activities. The share of transport sector in Gross Domestic Product (GDP) of India is steadily growing. It is one of the key indicators in assessment of socio-economic development of the country. Since traffic accidents are indicators of bottlenecks and other hindrances in smooth flow of traffic, hence collecting detailed data on road accidents for inferring on the trend and patterns of traffic accidents for devising appropriate preventive strategies is the need of the hour [1].

Alcohol among other substances is known to affect some important skills necessary for the safe operation of a vehicle, such as coordination, judgment, perception, tracking and reaction time, The decrease in performance with alcohol is due to reduced perceptual and motor tasks resulting from impaired information processing, decreased sensory responsiveness and motor ability [2].

In many countries it has been demonstrated that alcohol continues to be the most prevalent drug causing traffic accident, Driving under influence of drug/alcohol contributed 1.5% of total such accidents which resulted in injuries to 6,295 persons and 2,988 deaths in the country in 2015. Driving under influence of a controlled substance had caused 2.0% (348 out of 17,059 deaths) of fatalities in road accidents in major cities [3].

Thus a detailed study of these cases in relation to population profile, time of incidence, place of consumption, area of occurence et, enables us to evaluate different aspects of alcohol related traffic incidents

Since government policies and sanctions against drunken driving rely on official data on alcohol related accidents this study is of relevance.

Aims and Objectives

1. To evaluate the association of substance abuse with Road traffic incidents
2. To assess the socioeconomic and environmental factors related to substance abuse

Materials and methods

The study was conducted in victims of road traffic accident brought to the casualty of a tertiary care centre of Adichunchanagiri medical sciences, bg nagara between September 2016 and may 2017 The datas were collected regarding age, sex, nature of injury, educational status, type of vehicle, type of road user, time of incidence, history of alcohol intake, place of consumption.

The clinical assessment was conducted by the duty doctors and documented in the Proforma available at the department.

Results

A total of 1164 road traffic accidents were reported in our study period out of which 442 were found to be as a result of drunken driving, our study showed that males were the predominant victims

In our study, the age of the victims varied from as low as 17 years to as high as 72 years. (Table 1)It was observed that highest number of subjects belonged to the age group between 21 to 30 years of age with 146(33%) no of cases, closely followed by the age group between 31 to 40 years of age with 96 cases(21.72%). (Table 1)

In our study 146(33.03%) victims were agriculturists, followed by businessman (24%), industrial workers (21.04%), those involved in private jobs (11.08%), 44(9.95%) were unemployed and 4(0.9%) were students.

Majority of the victims were under educated with the highest number of cases being of those who were under matric (33.93%), illiterate (22.17%) or primary educated (16.74%). Only 11.09% of cases were of those who were graduates or higher. (Table 4)

For the study the 24 hours of the day has been divided into four categories of 6 hour each and the data analysis showed that most of the incidents occurred in the evenings 6pm-12 midnight (54.3%) and late nights (26.2%). (Table 3) Present study showed that motor cycle riders with 172 cases (39%) constituted the highest number of involved victims followed by those riding a three wheeler with 84 cases (19%). (Table 2).It was observed that before the accident 153 cases (34.62%) consumed alcohol in commercial institutions like bar, dhaba and local wine shops. (Table 5), followed by at a relative's place with 74 cases (16.74%). 73 cases (16.52%) had consumed alcohol at their own home.

Our study showed that maximum number of cases suffered from lower limb injury being 31.2% of the cases (138), followed by head injury in 24.7% of the cases (109), 18.3% (81) sustained upper limb injury (Table 6).

Discussion

The high involvement of males in the study is consistent with the findings of others [4, 5, 6].

It is observed that the age group between 21 to 30 years of age contained the highest number of cases, 146 (33%) closely followed by the age group between 31-40 years of age.

These findings are consistent with other authors work. [5, 7-9] But in contrary Ahlner J *et al*. [10] and Rao Y *et al*. [11] found 41-50 as the most commonly involved age group.

The reason behind involvement of the younger age group is that they are most actively involved in recreational activities and hence are most ambulatory. Less involvement of the extremes of age is because they usually tend to remain indoors and avoid alcohol.

In the study 146 victims (33.03%) were agriculturists followed by businessman and those engaged in industrial jobs. 4 students were also involved in our study. This can be attributed to the fact that these people are commonly mobile and have easy access to alcohol leading to accidents. The victims were mostly lowly educated with the highest number of cases involved being of those who were under matric (33.93%), illiterate (22.17%), or primary educated (16.74%). This can be attributed to the reason that people with higher educational background are more vigilant to the surroundings and avoid risk taking behavior.

However people with low educational background are usually not well employed and have to move around for better prospects making them more likely to meet with an accident. Highest number of cases occurred between 6pm-12 midnight and 12 midnight -6am and least number of cases was seen in the interval between 6am-12 noon.

These findings are similar with the findings of Jani C B *et al*. [5] and Rao Y *et al*. [11] who indicated higher incidence of cases in evenings and nights. However the study differs with the findings of Arora P *et al*. [8] who indicated maximum crashes during day time.

This can be due to the fact that more number of people returns from their place of work and activity at that time. Also alcohol consumption mostly takes place after one has completed their daily work. This coupled with fatigue of the whole day and the urge to reach home quickly leads to more number of crashes in the nights and evenings.

Two wheelers with 172 cases (39%) constituted the highest number of involved victims also drivers of various vehicles and the pillion rider in case of two wheelers. The drivers both of two wheelers, three wheelers, four wheelers etc. are commonly involved along with pedestrians. Passengers of cars are less commonly involved, consistent with findings of other authors [6, 8, 12, 13].

Drivers implicated is due to the reason that under the influence of alcohol there is a decrease in driving ability and reaction time which leads to more careless driving behavior and subsequent accidents.

Significantly 153 cases had consumed alcohol from commercial places like bar, dhaba and illegal liquor stores. 74 cases had consumed alcohol over at a relative house.

This can be attributed to the reason that commercial institutions which serve alcohol are more located in the outskirts of the region and the highway which increases the risk of accidents maximum number of cases suffered from lower limb injury being 31.2% of the cases (138), followed by head injury in 24.7% of the cases (109), 18.3% (81) sustained upper limb injury.

This is attributable to the fact that majority of the victims are two wheeler drivers who are commonly involved in side impact collisions and have a tendency to not wear helmets and protective gears

Conclusion

The study shows the preponderance of male population with regard to alcohol consumption. This study also showed that alcohol consumption and associated trauma was most commonly seen in the young and active age groups, the incidence of alcohol consumption and trauma is more common during the evening and night hours. all road user groups, including drivers, riders and pedestrians, are involved, we therefore conclude that road traffic accidents and substance abuse is a major health concern and concrete steps should be taken to prevent this social problem, a few suggestions are.

Primary and secondary preventive measures regarding the modern safety devices should be considered.

Environmental interventions should be considered by making alcohol harder to get, by raising the price of alcohol and keeping the minimum drinking age to 21,enacting zero tolerance laws that prohibit driving after any amount of drinking for people under age 21,banning liquor shops adjacent to highways.

National information systems should be strengthened with appropriate knowledge, skills, techniques and resources to promote demerits of driving under the influence of alcohol as an important element in road safety information systems within police and health sectors.

Independent studies by medical institutions should be undertaken periodically to evaluate the problem by both qualitative and quantitative research methods.

Health screening for alcohol problems should be undertaken in hospital emergency rooms among all persons with a road traffic accidents.

Physicians in emergency rooms should be trained to detect alcohol involvement in RTAs and use of breathalyzers should be promoted. Public education programmes must be specific and target oriented.

Table 1: Age group wise distribution

S. No.	Age Group	No. Of Positive Cases	Percentage
1	0-10	0	0
2	11-20	73	16.5
3	21-30	146	33
4	31-40	96	21.7
5	41-50	50	11.3
6	51-60	45	10.2
7	>60	32	7.2

Table 2: Type of road users.

S. No.	Type Of Road Users	No. Of Cases	Percentage
1	Pedestrian	68	15.4
2	Two wheeler driver	172	39
3	Three wheeler driver	84	19
4	Four wheeler driver	60	13.6
5	Pillion rider	58	13
	total	442	100

Table 3: Time of Incidence.

Sl.no	Time of incidence	Cases	percentage
1	12midnight-6am	116	26.2
2	6am-12noon	14	3.2
3	12noon-6pm	72	16.3
4	6pm-12midnight	240	54.3
	total	442	100

Table 4: Educational Status of Victims.

Sl.no	Educational status	Cases	percentage
1	Primary	74	16.74
2	Illiterate	98	22.17
3	Under matric	150	33.93
4	Matriculate	64	14.48
5	Graduate	49	11.09
6	postgraduate	4	0.91
7	Unknown	3	0.68
	total	442	100

Table 5: Place of Alcohol Consumption before Accident.

Sl.no	Place of consumption	Cases	percentage
1	Own home	73	16.52
2	Friends home	81	18.33
3	Workplace	36	8.14
4	Relative house	74	16.74
5	Commercial	153	34.62
6	Not specified	12	2.71
7	unknown	13	2.94
	total	442	100

Table 6: Nature of injuries.

Sl.no	Nature of injury	Cases	percentage
1	Head injury	109	24.7
2	Chest injury	48	10.8
3	Abdominal injury	19	4.3
4	Upper limb injury	9	2.1
5	Lower limb injury	81	18.3
6	Pelvic injury	138	31.2
7	Faciomaxillary trauma	38	8.6
	total	442	100

Table 7: Occupation of victims.

Sl.no	Occupation	Cases	Percentage
1	Agricultural workers	146	33.03
2	Businessman	106	24
3	Industrial workers	93	21.04
4	Private jobs	49	11.08
5	Students	4	0.9
6	Unemployed	44	9.95
	Total	442	100

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