



Study of Incidence of Alcohol and Pedestrian Deaths in Road Traffic Incidents

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ABSTRACT

Death in accidents is an inescapable fact and so also is the influence of alcohol in the same. While studies related to drunken driving are aplenty there is a need for study of influence of alcohol on pedestrians. In our study pedestrians constituted nearly 43% of total alcohol related deaths with 30-39 years age group the most commonly involved. Victims were lowly educated and most of them had consumed alcohol in commercial institutions and in their work places with maximum casualty in the evenings and night. The mean BAC is found to be 182.4 mg/dl. The problem of pedestrian deaths due to alcohol consumption is unrecognized and hidden due to lack of good quality research data. Strict enforcement supplemented with education is one of the most powerful tools to tackle the problem.

KEYWORDS

Alcohol Consumption, pedestrians, RTA, BAC

INTRODUCTION

India is a rapidly growing country in a phase of transition with increased urbanization, industrialization, and motorization. With such a rapid pace of progress accidents are a reality waiting to happen. Death in accidents is an inescapable fact and so also is the influence of alcohol in the same. WHO defined accidents as an unexpected, unplanned occurrence that may involve injury[1] The total number of deaths every year due to road accidents has now passed the 135,000 mark, according to the latest report of National Crime Records Bureau or NCRB.[2]The concentrations of alcohol in blood and other body fluids are highly correlated, and both measurements are widely used as evidence to prove the over-consumption of alcohol in forensic and legal medicine.

There is progressive loss of ability as blood alcohol concentration increases due to increase in reaction time, false confidence, impaired concentration and decreased visual and auditory acuity. This leads to more involvement of pedestrians in such accidents. However alcohol related studies have particularly been narrowed down to drunken driving, a study related to pedestrian deaths due to alcohol is also the need of the hour due to the increased involvement of pedestrians who have consumed alcohol.

Thus a systemic study of these cases in matters like population profile, time of incident, place of occurrence, cause of death, blood alcohol concentration involved etc. enables us to evaluate different aspects of alcohol related traffic incident deaths.

MATERIALS AND METHODS

The study was conducted in victims of fatal road traffic accident cases brought to mortuary of Gauhati Medical College and Hospital for medico-legal autopsy from 1st January 2014 to 30th December 2014. Various data were collected like age, sex, occupation, religion, date and time of crash, type of vehicle, type of road user and history of alcohol intake was taken and noted in a specially designed proforma. Blood samples were collected from femoral vein. [3] About 10 ml of blood was collected by a sterile syringe in glass-capped bottles containing sodium fluoride as preservative. The blood samples

were quantified by gas liquid chromatography. Victims of RTA cases with hospital stay greater than 48 hours have been excluded from the study.

OBSERVATION AND RESULTS

Incidence:-

A total of 2994 cases of medico legal autopsy were carried out during the study period out of which 948 cases were of road traffic incidents. Out of these 948 cases 347 were those, which involved pedestrians. Among the cases involved of RTA 192 were found under the influence of alcohol, 83 among them being pedestrians.

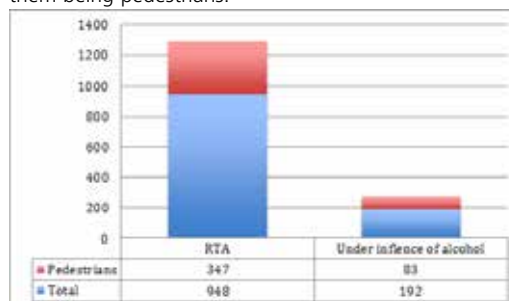


Figure 1 showing pedestrians and total cases of RTA involved

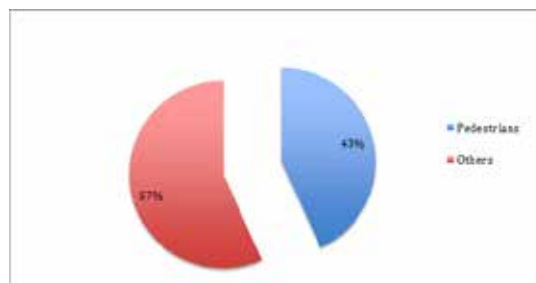


Figure 2 showing pedestrian deaths with alcohol consumption

Sex distribution:-

All the 83 cases of pedestrian's deaths under the influence of alcohol in RTA's were exclusively males.

Age distribution

The age groups 30-39 and 40-49 showed the highest number of cases with 29 (34.94%) and 22 (26.51%) respectively. The youngest person to be involved was 15 years and the oldest 68 years. The findings are noted as below in the table.

Age groups	Cases	Percentage
0-9	0	0
10-19	5	6.02
20-29	18	21.69
30-39	29	34.94
40-49	22	26.51
50-59	7	8.43
Above 60	2	2.41
Total	83	100

Table 1 showing age distribution of cases

Educational Status

The persons involved usually were lowly educated with under matric, illiterate and primary educated constituting the majority. There was only 1 case of the person being a graduate or higher. The following table illustrates the findings.

Educational Status	Cases	Percentage
Primary educated	11	13.25
Illiterate	15	18.07
Under Matric	31	37.35
Matriculate	9	10.84
HS pass	16	19.28
Graduate or higher	1	1.21
Total	83	100

Table 2 showing educational status of victims

Time of incidence

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 (42 cases) and evenings (32 cases) in our study.

Place of alcohol consumption

It is observed that most of the cases had consumed alcohol in commercial outlets like dhaba, Wine shops, Country liquor shops etc. with 39 cases. The next highest cases were found among those who had consumed alcohol in their work places.

Place of consumption	Number of cases	Percentage
Own home	7	8.43
Work place	17	20.48
Commercial outlets	39	47
Relative home	7	8.43
Known Associate or Friend's Home	13	15.66
Total	83	100

Table 3 showing place of consumption

Blood Alcohol Concentration of victims

In our study the Blood Alcohol Concentration of 11 cases (13.25%) was above 200mg/dl with 37 cases (44.58%) and 17 cases (19.15%) between 151-200 mg/dl and 101-150 mg/dl respectively. Least number of cases is observed between 0-50 mg/dl.

The mean BAC is found to be 182.4 mg/dl. Of the cases, 81

of them exceeded the permissible BAC, which is 30 mg/dl. Only 2 cases had BAC less than the allowed limits. Findings are noted as below.

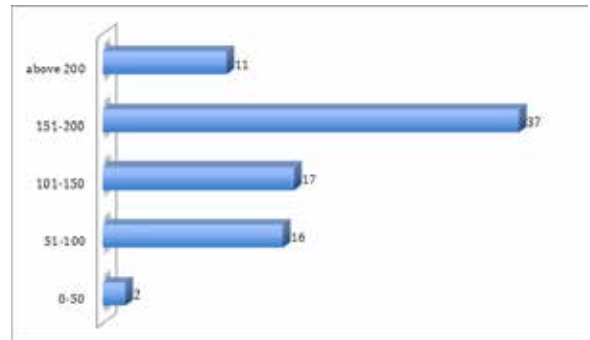


Figure 3 showing Blood Alcohol Concentration

DISCUSSION:-

It is observed that in deaths due to alcohol in road traffic accidents nearly 43% of the victims were pedestrians. These findings are consistent with findings of Fabbri A et al[4] Ravi K E et al[5], Gjerde H. et al[6], Das A et al[7], Edirisinghe AS et al [8], Arora P et al [9] which implicated pedestrians as the most commonly group involved.

Pedestrians being the most common victims can be explained by the fact that under the influence of alcohol they lack the general traffic sense, which ultimately proved fatal. Further the absence of proper footpaths and well-defined crossing sections makes them more vulnerable to accidents.

In our study the age group 30-39 and 40-49 were most involved. These findings are comparable to the study of Ahlner J et al [10], Rao Y et al [11]. However few authors like Jani C B et al[12], Bhullar DS [13], Arora P[9] implicated the age group between 20 and 30 as the most commonly involved. The reason behind involvement of these age groups are that they are most actively involved in occupation and hence are most ambulatory and use alcohol as a means of recreation. Less involvement of the extremes of age is thus self-explanatory, as they tend to remain indoors and avoid alcohol.

Males being the exclusive casualty are findings of most studies. This can be explained by the fact that males remain the major earning member of the family, so they are exposed to risks and accidents of this nature. Also in our country alcohol is seen as a taboo among the women and hence consumption is much less and in the confines of privacy.

From the educational status of victims and it is evident that majority of the victims were lowly educated with the highest number of cases involved being of those who were under matric, primary educated or illiterate. This can be attributed to the reason that people with grater 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 .These findings are similar with the findings of Jani C B et al [9] and Rao Y et al [7] Arora P et al [12] who indicated higher incidence of cases in evenings.

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 chores. 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.

Highest consumption of alcohol was found in the commer-

cial outlets and at work place. Commercial institutions, which serve alcohol, are more located in the outskirts of the region and the highway that increases the risk of accidents. Also the increased confidence following alcohol intake increases the urge for more consumption and subsequent deaths have been reported while going for more purchase of the same. Also the availability of peers in such places with less scrutiny of privity eyes make the victims to consume more amount of alcohol.

This finding is similar to the studies of Jani C B et al [12], Edirisinghe AS et al [8], Arora P et al [9] which showed similar results.

The mean BAC is found to be 182.4 mg/dl. A high BAC leads to different manifestations leading to difference and error in judgment, which leads to increased number of accidents. Also pedestrians with high BAC lose their sense of direction and wander their way onto incoming vehicles leading to casualty.

CONCLUSION

In conclusion, pedestrian deaths due to alcohol consumption are a major problem in India and other developing regions of the world. The problem is unrecognized and hidden due to lack of good quality research data from many countries. Strict enforcement supplemented with education is one of the most powerful tools to tackle the problem in low-and middle-income countries and needs serious consideration. Many other measures like increasing the legal drinking age, restricting the availability of alcohol by limiting timings, and controlling the unabated promotion of alcohol seems promising, but needs implementation. Many broader issues also need closer examination to develop and implement rational alcohol policies. For this to happen multidisciplinary approach is required which will prevent the loss of many valuable lives.

REFERENCES:-

1. WHO (2002). World Health Report 2002: Reducing Risk, Promoting Health Life. Geneva: World Health Organization.
2. National Crimes Record Bureau, Accidents in India 2012 - Statistics Government of India (May 2013)
3. Millo Tabin, Jaiswa A, Behera K C. Collection, preservation and forwarding of biological samples for toxicological analysis in medico- legal autopsy cases : A review; JIAFM, 30(2):96-100
4. Fabbri A, Marchesini G, Morselli-Labate AM, Rossi F, Cicognani A, Dente M, Iervese T, Ruggeri S, Mengozzi U, Vandelli A Positive blood alcohol concentration and road accidents. A prospective study in an Italian emergency department. Emerg Med J. 2002 May;19(3):210-4.
5. Ravi K E, Muralidhar K S, Vijaya K Prospective Study On Road Traffic Accidents JPAFMAT, 2004; 4:12-16
6. Gjerde H, Christophersen AS, Normann PT, Morland J. Toxicological investigations of drivers killed in road traffic accidents in Norway during 2006-2008. Forensic Sci Int. 2011 Oct 10;212(1-3)
7. Das A, Gjerde H, Gopalan SS, Normann PT. Alcohol, drugs, and road traffic crashes in India: a systematic review Traffic Inj Prev. 2012;13(6):544-53
8. Edirisinghe AS, Kitulwatte ID, Senarathne UD. A study into blood alcohol concentration in fatal accidents among vulnerable road users in a tertiary care hospital Sri Lanka. Int J Inj Contr Saf Promot. 2013 Dec 16
9. Arora P, Chanana A, Tejpal HR Estimation of blood alcohol concentration in deaths due to roadside accidents. J Forensic Leg Med. 2013 May;20(4):300-4
10. Ahlner J, Holmgren A, Jones AW. Prevalence of alcohol and other drugs and the concentrations in blood of drivers killed in road traffic crashes in Sweden. Scand J Public Health. Epub 2013 Nov 21. 2014 Mar;42(2):177-83.
11. Rao Y, Zhao Z, Zhang Y, Ye Y, Zhang R, Liang C, Wang R, Sun Y, Jiang Y. Prevalence of blood alcohol in fatal traffic crashes in Shanghai. Forensic Sci Int. 2013 Jan 10;224(1-3):117-22.
12. Jani C. B , Gupta Sanjay , Barot Hitendra and Gadhavi Jaydip .Retrospective study of cases of drunkenness with emphasis on procedure and interpretation of results. 2008. JIAFM, 29(3);128-135
13. Bhullar DS. Drunken driving: Indian perspective in world scenario & the solution. J Punjab Acad Forensic Med Toxicol 2012;12(1):5-9