

Role of Alcohol in Road Traffic Accidents

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ABSTRACT

Aim: To determine the frequency of road traffic accidents among the alcohol users.

Study Design: Retrospective study

Place and Duration of Study: Department of Forensic Medicine & Toxicology, Peoples University of Medical and Health Sciences, Nawabshah, Shaheed Benazirabad from 1st January 2014 to 31st December 2017.

Methodology: Two hundred and seventy four samples were collected from Emergency Department, Peoples Medical College Hospital, Nawabshah, Shaheed Benazirabad. Drivers injured following the incident were selected for inclusion in study. After complete examination and evaluation of injuries patients underwent routine baseline investigations along with X-rays, ultrasound and toxicologic screening.

Results: There were 189(69%) males and 85(31%) females. Thirty two(11.6%) patients died among which 21(65.6%) were males and 11(34.3) were females. Forty one (15%) patients tested positive for alcohol intoxication detected at blood toxicology screen on admission to emergency department. Of 32 patients who died, 18 (56%) were alcohol intoxicated.

Conclusion: Alcohol impairs driving and decision taking ability leading to fatal and non-fatal road traffic injuries. The high taxes on alcoholic beverages and low legal blood alcohol levels are helpful in many countries to prevent the incidence of alcohol induced fatal and non-fatal road traffic accidents.

Keywords: Alcohol, road traffic injuries, intoxication, substance abuse

INTRODUCTION

The increasing number of road traffic accidents can be attributed to the increased rate of substance abuse. The increased abuses of substances like alcohol, hypnotics and stimulants have led to increase in fatal and non-fatal road traffic accidents.¹ The abuse of these substances hinders the driving ability and thinking ability of the patients². Some researchers have suggested that the total proportion of people driving with substance abuse could be around 4.5% however further studies are required to analyze blood toxicology screen of moving traffic³.

This is particularly difficult to perform as the people are very unlikely to give blood for screening when randomly picked from moving traffic however these kinds of studies can give an idea of how many people driving with intoxications end up having fatal or non-fatal road traffic accidents. Some researchers have suggested that oral fluids can also be collected instead of blood and offers similar results⁴. Alcohol accounts for 40% of hospitalizations either way. It accounts for 50,000 deaths and 500,000 hospital admissions per year in UK In this study we evaluate the blood alcohol concentration of drivers involved in road traffic injuries⁵.

MATERIALS AND METHODS

This retrospective study was conducted at Department of Forensic Medicine & Toxicology, Peoples University of Medical and Health Sciences, Nawabshah, Shaheed Benazirabad from 1st January 2014 to 31st December 2017.

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During the study duration, road traffic accidents presented at the Emergency department were evaluated for the presence of alcohol intoxication. Drivers injured following the incident were selected for inclusion in study. Other passengers in the car though injured were not included in the study as the study evaluates the impaired driving secondary to alcohol intoxication. Pedestrians injured secondary to road traffic injuries were also excluded from study. Blood tests were collected at their first presentation to the emergency department. After complete examination and evaluation of injuries patients underwent routine baseline investigations along with X-rays, ultrasound and toxicologic screening. SPSS-20 was used for statistical analysis.

RESULTS

One hundred and eighty nine (69%) were males and 85 (31%) were females (Fig. 1). Thirty two (11.6%) patients died among which 21(65.6%) were males and 11(34.3%) were females (Fig. 2). The age range was 20–65 years with mean age was 51.7±10.2 years. The most common vehicle involved in road traffic accidents was two wheelers with 192 cases followed by three wheelers with 45 cases, four wheelers with 29 cases, 6 cases with injuries due to truck accidents and 2 cases with bus injuries (Fig. 3). Among the injured drivers, 137 were laborers, 65 were unemployed, 57 were employed at either government or private setup and 15 were students (Fig. 4). Forty one (15%) patients tested positive for alcohol intoxication detected at blood toxicology screen on admission to emergency department. Thirty five were males and 6 were females. Of 32 patients who died, 18 (56%) were alcohol intoxicated.

Fig. 1: Male to female ratio of total number of injured

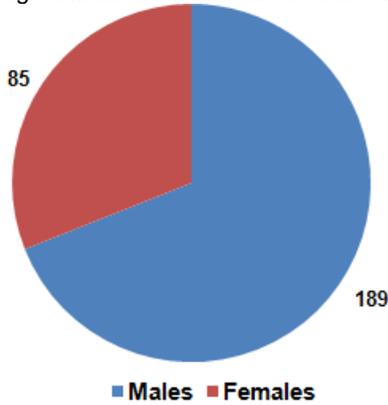


Fig. 2: Male to female ratio of fatal road traffic injuries

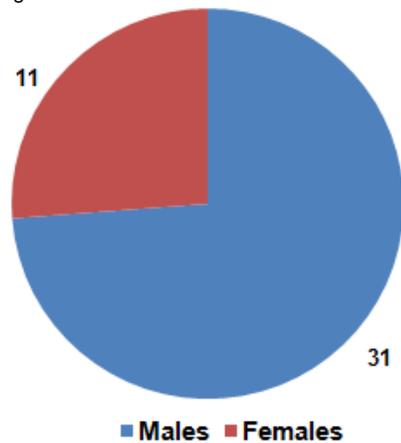


Fig. 3: Vehicles involved in road traffic injuries

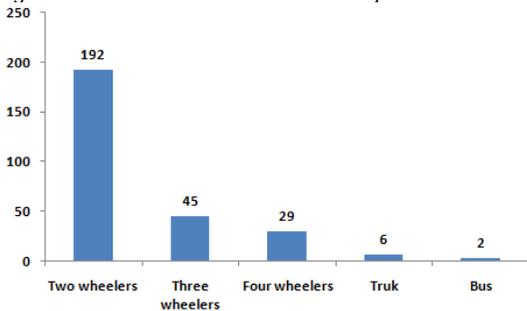
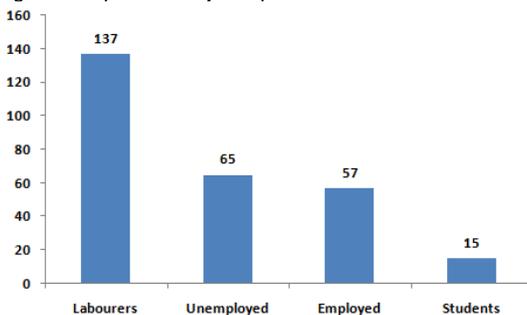


Fig.4: Occupation of injured patients



DISCUSSION

Our study shows that 15% of patients were positive for alcohol intoxication. Alcohol impairs driving ability and quick decision taking ability which leads to road traffic accidents. Majority of our study population were males as in an eastern country like Pakistan alcohol is at easier access for males than to females. The most common vehicle was two wheelers as it is easier to lose balance on this kind of vehicles. Johnston et al⁶ in their study concludes that alcohol is the single most important factor involved in road traffic injuries. He further concludes that every one of three people killed, and every one of five people injured in road traffic injuries has blood alcohol levels greater than 50 mg/100 ml. Sutlovic et al⁷ in his study reports an autopsy analysis of 474 cases with 337 toxicological screening tests over a 10-year period in Split–Dalmatia County. They reported that 177 patients had blood alcohol levels greater than 0.5g/kg. In 2008, Moving and his colleagues⁸ performed a study by evaluating blood alcohol levels among drivers. Their results conclude that subjects with blood alcohol concentration greater than 0.8g/L had higher rates of getting injured while driving (OR = 15.5 (95% CI:7.1-33.9).

Woratanarat et al⁹ conducted a study to find the association between alcohol intoxication and road traffic accidents. His study results report that the odds of having a blood alcohol concentration greater than 50 mg/dl in patients with road traffic accidents were high (adjusted odds ratio (OR) 63.6 (95% CI: 25.5–158.9). Milloet al¹⁰ measured the blood alcohol concentration of 500 subjects to study the association of blood alcohol levels and road traffic injuries among drivers and pedestrians. His study results report that 34% subjects tested positive for alcohol. The mean blood alcohol concentration was 196.9 mg%. A study published in 2005 reports that intoxicated drivers denied the fact that their driving was impaired due to alcohol intoxication.¹¹This was similar to our study as most of the injured drivers stated while interviewing that the road traffic accident was unlikely due to alcohol intoxication.

Bogstrand et al¹² showed that the most common substance found among subjects with road traffic accidents was alcohol followed by cocaine and amphetamines. They further concluded that the use of psychoactive substances was more common among patients who got injured rather than non-injured drivers. Drivers ingesting more than one psychoactive substance were more prone for road traffic injuries. A cases-control study conducted in Norwegia suggests that rate of road traffic accidents were more common in subjects who had multiple substance intoxication than those with single substance intoxication.¹³ Researchers have concluded that the combined effect of marijuana and alcohol causes more damage than the effect of higher doses of each of either of these alone.¹⁴Honkanen et al¹⁵ conducted a study among 201 drivers and 325 controls. Blood alcohol concentrations were measured among both groups. Study subjects were drivers who presented to the emergency department six hours after injury while controls were drivers randomly selected from fuel stations. They concluded that alcohol was the most powerful risk factor for road traffic injuries. 15% of patients and 1% controls tested positive for alcohol.

Many researchers have concluded urine toxicology results and compared them with the occurrence of road traffic accidents in subjects however it has been seen that toxins stay for a longer duration in urine hence blood toxicology screens are better able to demonstrate the altered level of consciousness as the cause of road traffic accidents¹⁶.

CONCLUSION

The high taxes on alcoholic beverages and low legal blood alcohol levels are helpful in many countries to prevent the incidence of alcohol induced fatal and non-fatal road traffic accidents. However, in countries like Pakistan the check and balance of moving traffic is not reliable for reducing the incidence of alcohol induced road traffic injuries. If alcohol is inaccessible to citizens, it can reduce the rate of road traffic injuries and decrease the burden on health care.

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