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Comparison of Severity of Injuries among Alcoholics and Non Alcoholics in Motor Bike Accidents in a Rural Tertiary Care Hospital

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Abstract

Trauma is a significant cause of morbidity and mortality worldwide. Two-wheeler riders have the highest incidence of road traffic accident due to their unrestrained nature. Risk is more when compounded by alcohol consumption as this group of people have reduction in judgemental capacity, risk-taking behaviour and involvement in dangerous and adventurous activities. This type of behavior leads to an increased rate of severity of injuries and mortality. Chest, head, neck, maxillofacial and abdominal injuries are common in two-wheeler accidents. Among 149 patients, 83 patients were alcoholics and 66 were non alcoholics. According to AIS score, severity increased in alcoholics when compared to non alcoholics. Half of the road traffic accidents happen when the riders are under alcohol intoxication. Alcohol increases the frequency of road traffic accidents and severity. Even if it doesn't directly increase the severity of the injury, alcohol consumption can lead to complications like airway compromise and aspiration.

INTRODUCTION

Trauma is a significant cause of morbidity and mortality worldwide. Two-wheeler riders have the highest incidence of road traffic accident due to their unrestrained nature. Risk is compounded by alcohol consumption. Alcohol is considered a psychotropic drug, as it acts on the central nervous system (CNS). Alcohol gives drivers of motor vehicles a false sense of confidence, impairing their ability and motor coordination^[2]. Several researchers have demonstrated that the fact of driving under the influence of alcohol is a bit worrying, because it increases the risk of involvement in violations and traffic accidents, resulting in often fatal victims and damages to the community. This type of behavior leads to an increased rate of severity and mortality. In general, effects of the alcohol on the psychomotor performance and involvement in accidents are directly proportional to the level of alcohol in the blood., the higher the level, the greater the deterioration. Chest, head, neck, maxillofacial and abdominal injuries are common in two-wheeler accidents^[1]. Besides that, the risk of involvement in traffic accidents increases with the extent to which there is an increase in the concentration of alcohol in the driver.

Data provided by the World Health Organization (WHO) indicated that approximately two billion people worldwide consume alcohol and this consumption may have caused 1.8 million deaths during the 2004 year, of which 1/3 are represented by trauma. Injuries from traffic accidents account for 2.1% of total fatalities and 23% of deaths from external causes reported annually worldwide^[4].

Abbreviated Injury Scale: The Abbreviated Injury Scale (AIS) is an anatomically based severity scoring system first introduced in 1969. It has been revised and updated against survival data to provide a reasonably accurate way of ranking the severity of injury^[8].

The Abbreviated Injury Scale (AIS) classifies each injury by body region on a 6 point scale. AIS is the system used to determine the Injury Severity Score (ISS) of the multiply injured patient^[9].

The AIS classifies personal injuries by body region as follows^[10]:

- AIS Minor
- AIS Moderate
- AIS Serious
- AIS Severe
- AIS Critical
- AIS Maximal (currently untreatable)

Injuries are ranked on a scale of 1-6, with one being minor, five severe and six an unreliable injury. It

represents the "threat to life" associated with an injury and is not meant to represent a comprehensive measure of severity^[10].

MATERIALS AND METHODS

Study Design: The present study was a single-centre, Prospective Observational study.

Study Population: patients admitted into the emergency medicine department with motorbike accidents at PESIMSR Hospital, Kuppam from October 2018 to July 2020.

Inclusion Criteria: All patients presenting to ER with motor bike accidents.

Exclusion Criteria:

- Extremes of Age.
- Patients not willing for the study.

RESULTS AND DISCUSSIONS

During the study period, 149 patients were enrolled in the study according to study inclusion criteria and were distributed according to age group in (Table 1).

Age: In the present study, most of patients age group are 25-50 years, 114 (76.5%), followed by less than 25 years 25 (16.8%) and more than 50 years 10 (6.7%). Age group 25 to 50 years accounted for more than three-fourths of the total involved.

Airway: At the time of admission to Hospital 120 (80.6%) patients had a patent airway, 16 (10.7%) patients airway is maintainable and 13 (8.7%) patients had a compromised airway.

Alcohol: Among 149 patients, 83 (55.7%) were alcoholic patients and 66 (44.3%) were non-alcoholic patients. The ratio between the alcoholic and Non-alcoholic is 1.25:1. It indicates that alcoholics are at more risk of road traffic accidents.

Glasgow Coma Scale: All 149 patients level of consciousness were assessed with GCS, 89 (59.7%) patients consciousness levels are between 13-15 followed by 42 (28.2%) patients were between 8-13 and 18 (12.1%) patients were below 8.

The observations and results of the present study were compared with the available previous similar studies

Abul Hasnat^[11]. Study found that most patients were in the age group between 2nd-4th decade and mean age was 29.63 years, which is similar to other

studies. The possible explanation for this is that the people in this age group participate in dangerous exercise and sports, drive motor vehicles carelessly and are more likely to be involved in violence. But the effect of head injury is disproportionately severe in the elderly, requiring more neurosurgical care.

In the present study, most patients were in the age group is 25-50 years accounting for 76.5%, followed by those less than 25 years of age (16.8%). People aged more than 50 years accounted for only 10.67%.

Similar observations were also made by Mishra B^[12] Bener A^[13], Jirojwong S^[14], WHO in the Injury Chart book^[15], Rakhi Dandona^[16], Khare N^[17], Agarwal^[18] Guru raj G^[25] and Ghimamire^[20]. Similar findings also observed in studies conducted at Delhi^[21] and Pondicherry^[22]. This can be attributed to the fact that this age group is more active and often travels for the job and recreational activities. They also tend to use less protective gear and involve in dangerous adventures.

At the time of admission to the hospital, 80.6% of patients had a patent airway, 10.7% of patients' airway is maintainable and 8.7% had a compromised airway. Among 149 patients, 83 (55.7%) were under the influence of alcohol and 66 (44.3%) have not consumed alcohol. The ratio between the alcoholic and non-alcoholic is 1.25:1. The current study has a higher proportion of accident victims who have consumed alcohol before riding. The study conducted by Bharadwaj^[26] shows that 18.01% of victims had h/o alcohol consumption within 6 hours before the accident. In the WHO supported study in Nepal^[27], (16.9%) of victims were found to consume alcohol 2 to 3 hours before the accident. Sreedharan J^[28] had found that 20 % of the motorcycle riders had consumed alcohol. The availability of alcohol stores in highway junctions may be why a higher percentage of alcoholic riders in this study.

Increased alcohol use in drivers exposes them to the risk of accidents as the judgment gets impaired and control over vehicles is lost due to alcohol and other drugs. National maximum legal blood alcohol concentration is 30 mg/100ml^[29].

The role of alcohol in impairing driving ability is well documented in this study. Also, the impairment increases as the blood alcohol level increases. Patients cannot judge the speed and distance between the vehicles on the road while driving under the influence of alcohol. Alcohol increases the risk-taking tendency and leads to high risk driving with overconfidence. Patients under the influence will have slow reaction time, reduced coordination and concentration. Hence alcohol increases the risk of road traffic accidents and drink and drive should be avoided for safety.

In the present study, the AIS score is one in 54 patients among them, 28 (51.85%) patients were alcoholic and 26 (48.15%) were non-alcoholic. AIS score of two was observed in 43 patients among them, 20 (46.51%) patients were alcoholic and 23 (53.48%) were non-alcoholic. AIS score of three was observed in 21 patients among them, 12 (57.47%) were alcoholic and 9 (42.85%) were non-alcoholic.

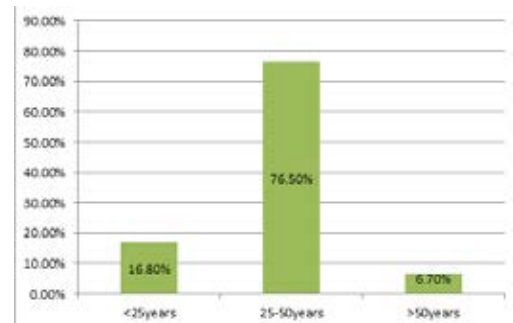


Fig. 1: Distribution of study subjects according to age

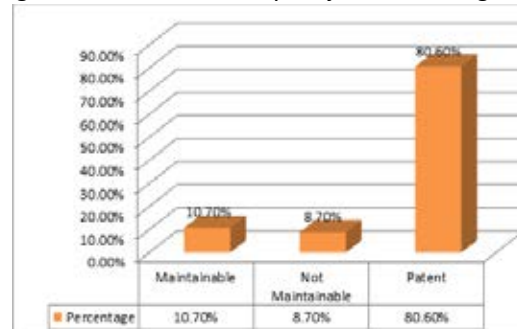


Fig. 2: Distribution of study subjects according to Airway

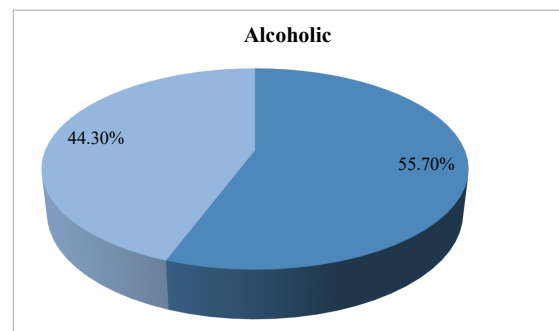


Fig. 3: Distribution of study subjects according to alcohol

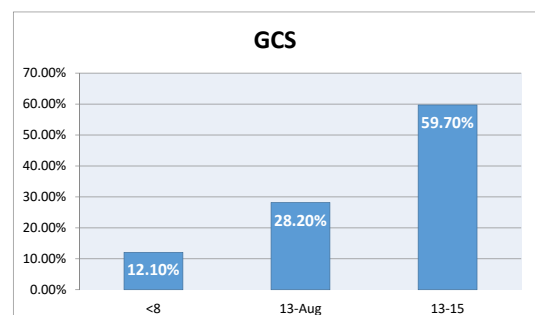


Fig. 4: Distribution of study subjects according to GCS

Table 01: Distribution of study subjects according to age

Age	No. of subjects	Percentage
<25years	25	16.8
25-50years	114	76.5
>50years	10	6.7
Total	149	100

Table 02: Distribution of study subjects according to Airway

Airway	No. of subjects	Percentage
Maintainable	16	10.7
Not Maintainable	13	8.7
Patent	120	80.6
Total	149	100

Table 03: Distribution of study subjects according to alcohol

Alcohol	No. of subjects	Percentage	Ratio Alcoholic: Nonalcoholic
Yes	83	55.7	1.25:1
No	66	44.3	
Total	149	100.0	

Table 04: Distribution of study subjects according to GCS

GCS	No. of subjects	Percentage
<8	18	12.1
8-13	42	28.2
13-15	89	59.7
Total	149	100.0

Table 05: Alcohol and its association with AIS SCORE among the subjects:

AIS Score	Alcohol	No	X ² value	p' value
	yes	No		
1	28 (33.7)	26 (39.4)	6.333	0.176
2	20 (24.1)	23 (34.8)		
3	12 (14.5)	9 (13.6)		
4	14 (16.9)	4 (6.1)		
5	9 (10.8)	4 (6.1)		
Total	83 (100)	66 (100)		

Figures in parentheses are percentage values

AIS score four was observed in 18 patients among them, 14 (77.77%) were alcoholic and 4 (33.34%) were non-alcoholic. AIS score five was observed in 13 patients among them 9 (69.23%) patients were alcoholic and 4 (30.76%) were non-alcoholic. No studies were found to compare the A.I.S score between alcoholic intoxicated people and non-intoxicated people.

In this study, the riders under alcohol influence were more than non-intoxicated riders and the riders with more severe injuries were riders under alcohol intoxication. Hence it is clearly understood that patients under the influence of alcohol were high-risk drivers and most R.T.A.s happen under the influence of alcohol and severity of injuries as per A.I.S score was also more in patients under the influence of alcohol. A study conducted by the Alcohol and Drug Information Centre, India revealed that around 40% of the road accidents have occurred under alcohol influence. The modern motor era may add speed in our routine, yet it has cost many lives in road traffic accidents. Drinking and driving-don't go together. Alcohol causes deterioration of driving skills and leads to road traffic accidents.

CONCLUSIONS

A road traffic accident is a significant public health problem. It results in death and disability among the

survivors who can be a burden to society. India being a developing country, is undergoing a demographic, epidemiological and economic transition which has changed the health scenario in a significant way.

Road traffic accidents can cause injuries to any part of the body. This study tries to differentiate the same in those who consumed alcohol from those who did not.

Hence there is need of various preventive and educational programs concerning consumption of alcohol and its effects, severity of injuries during driving can at least help in reducing not only mortality rate but the occurrence of accidents itself.

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