Original Research

Incidence of Ethanol Toxicity Detected at Poison Information Centre in Tertiary Care Teaching Hospital in South India

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Abstract

Alcohol is one of the most commonly consumed products of global addiction. Not only in developing countries like India, but also developed countries and low-income countries, the incidence of alcohol consumption is increasing. In India, across the all ages, the people are indulging in the consumption of various alcoholic beverages. It is becoming a major threat to the society because of the various socio-cultural practices across the nation along with unawareness of alcohol-related problems among the community. The younger population of the country is more prone to consume the alcoholic beverages for a social reason or recreational purposes. Along with males even the females are becoming the victims of alcoholic beverages.

In this present study, the incidences of ethanol consumption among the population of this reason is analysed and based on the results the preventive strategies and awareness can be created among such population.

Key words: Alcohol consumption; addiction; younger population; awareness

Introduction

Ethanol is a neurotoxic, psychoactive beverage and can be toxic when it is ingested in large quantities. It is rapidly absorbed across both the gastric mucosa and the small intestines, reaching a peak concentration after ingestion. Adolescents and young adults are the most prevalent group to present with acute alcohol intoxication. In view of gender blood alcohol levels after drinking may make women more vulnerable to developing alcohol related diseases because of first pass metabolism[1,2]. In view of increased incidence in ethanol toxicity in our region will help us to formulate the awareness programmes among young adolescents.

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Aim of the study

To access the incidence of ethanol toxicity in Manipal Poison Detection Centre, an analytical toxicology centre attached to tertiary care teaching hospital.

Materials and Method

Ethical Clearance was obtained from Institutional Ethics Committee. The urine and stomach wash samples of suspected ethanol poisoning cases which came for evaluation of Manipal poison detection centre from March 2015 to July 2016 were analyzed by color test using potassium dichromate and sulphuric acid. The data was tabulated and analysed using descriptive statistics.

Results

Among 50 patients of suspected poisoning aged about 4 to 70 years in both males and females of which 48 were detected positive for ethanol. Over which ethanol toxicity was detected in 86% in males (n=43) and 14% in females (n=7) [figure 1]. Around 40% of alcohol users were in the age group of 18 to 30 years (n=28) [figure2].

Figure 1: Gender wise distribution of cases

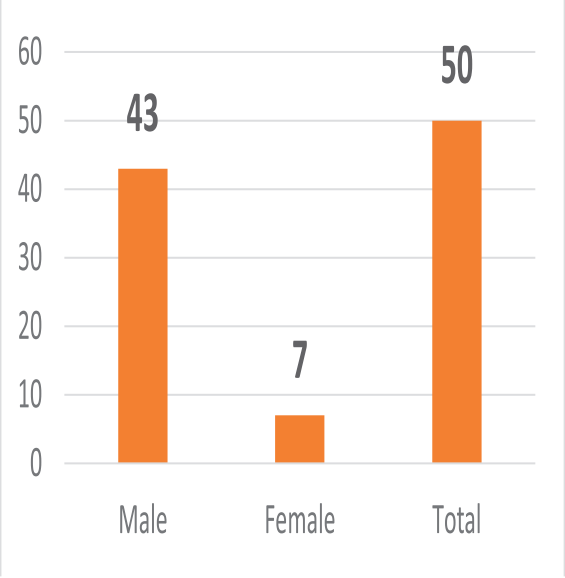
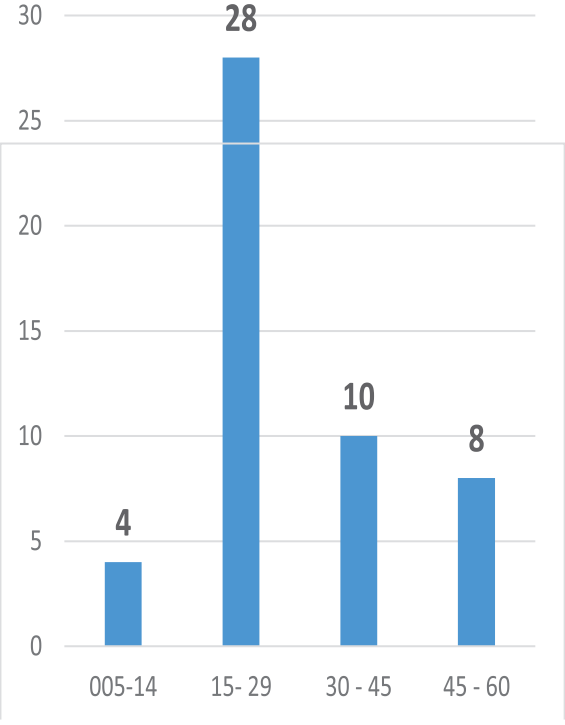


Figure 2: Agewise distribution of cases



Discussion

Ethanol toxicity is prevalent throughout the world, the associated mortalities are rare. Only in case of chronic toxicity the victims die due to complications. Larger quantity of ethanol injected will lead to disturbance in ethanol metabolism in liver. The WHO (World Health Organization) report in 2000 showed that incidence of ethanol toxicity was detected in 24% in male and 4% in female. Peak blood ethanol levels were obtained between 30 and 90 minutes after consumption when the stomach was empty[1]. The study has a limitation that it shows the presence and absence of ethanol in body but not the amount consumed.

In a study done by Ivana Komáreková et al[2], relatively lower amount of body water related to body fat in women than men, as well as lower gastric ADH activity in women, appear to be the main factors responsible for sex differences in alcohol metabolism and influence, allowing women to reach higher blood alcohol concentration after drinking equivalent amounts of alcohol than men.

According to E Baraona et al [3] study, females have a smaller gastric metabolism owing to a much lower activity of ADH, rather than variations in gastric emptying or hepatic ethanol oxidation. The combined pharmacokinetic variations may make women more susceptible to the effects of ethanol.

Frezze et al [4] showed in their study that women have higher blood ethanol concentrations than men after consuming comparable amounts of ethanol and are more susceptible to alcoholic liver damage. In this study total of 63 samples were included among which 20 men and 23 women showed increased ethanol bioavailability due to reduced stomach ethanol oxidation making women more vulnerable to acute and chronic alcoholism problems.

CM Oneta et al[5], demonstrated that as people get older, their first pass

metabolism of ethanol slows down, resulting in higher serum ethanol concentrations. It is yet unknown whether this is attributable to ageing alone or to additional variables such as atrophic gastritis with impaired alcohol dehydrogenase activity (ADH).

White et al[6], in their study showed the burden of excessive alcohol use among the college students and related consequences. Pillai et al [7], studied the association of drinking patterns in Goa and showed that male drinkers have risky drinking habits, which were linked to lower socioeconomic status.

As shown in a study, over 88 percent of Indians aged under 25 years consume alcoholic beverages[8]. The observations were noticed in the present study where maximum number of cases recorded in the third decade of life.

In National Family Health Survey-4 (NFHS-4) it was recorded that 29.2% men and 1.2% women consume alcohol[9]. Similar results were recorded in other studies[10 -12] and also in our study in which the males outnumbered the females.

Conclusion

This study contributes to the determination of percentage of alcohol users among the different age groups. In our study male gender are more prone to ethanol toxicity and shows that younger generations are indulging in alcohol intake which has to be addressed through proper awareness program.

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