

## Poisonings Are Avoidable: Prevent the Repent of Fatal Predictable Epidemics of Hooch Tragedies and Its Medicolegal Aspects

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### Abstract:

Alcohol is the most commonly used intoxicating substance in India. It is a legal product but there is a minimum legal drinking age limit that varies from state to state (from 18–25 years). Alcohol prohibition is one of the Directive Principles of the Constitution of India (Article 47), but taxation on sales of alcohol is a major revenue-earner for most states. As alcohol is a state subject, the production, distribution, and sale of alcohol is a state responsibility. Different state ministries and departments regulate different aspects of alcohol. For example, the Ministry of Social Justice and Empowerment (MoSJE) looks after alcohol use prevention programs, developing networks and capacity building for alcohol prevention and control, and monitoring. The Ministry of Health and Family Welfare (MoHFW) runs de-addiction centres.

**Keywords:** Methanol; HOOCH tragedy; Toxicity; Fatality; Blindness; Country-liquor; Formaldehyde; alcoholics

### Introduction

According to the Food Safety and Standards (FSS) Act 2006, Alcoholic Beverages come under the definition of “Food” and so the FSSAI has framed and notified the Food Safety and Standards (Alcoholic Beverages Standards) Regulation, 2018. These regulations have classified Alcoholic beverages in 2 types:

1. Distilled Alcoholic Beverage: (Brandy, Country Liquor, Gin, Rum, Vodka and Whisky, Liquors or Alcoholic cordial. Distillation increases concentration and taste/ flavour of alcohol.
  2. Fermented “un-distilled” alcoholic beverage: Wines (Grapes) and Beer (from Brewing any malted grain like Barley Malt).
- Q. *What can we do to protect ourselves from methanol related alcohol toxicity?*
- Refrain from purchasing or producing illegal alcoholic drinks.
  - Be suspicious about alcoholic drinks offered for sale in informal settings that are not licensed to sell alcohol, e.g. market stalls, and/or that are offered at a cheap price.
  - Do not buy alcoholic drinks sold in unlabelled containers.
  - Check branded products for labels that are poorly printed or with typographical errors, or bottles with broken seals. Do not buy these.
  - Be aware of the symptoms of methanol poisoning and seek medical attention immediately.

### Discussion

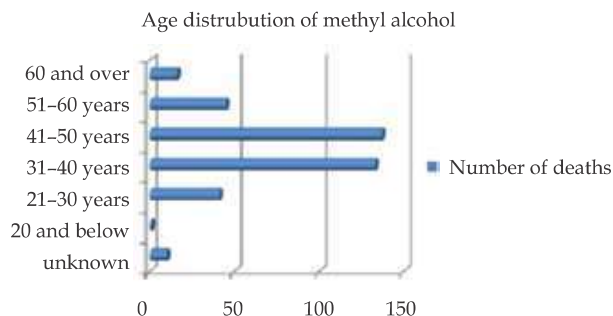
The Indian liquor industry comprises the Indian Made Foreign Liquor (IMFL), country liquor, foreign Liquor Bottled in Origin (BIO), illicit alcohol, beer and wine segments. Beer has become a popular beverage in the country only over the

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last two decades and it's growing at a rate of about 17 per cent per year. The highest levels of beer consumption in India are observed in the southern states. South India dominates the alcohol market in India, with that region accounting for about 60 per cent of total IMFL sales and 45 per cent of total beer sales.



**Fig. 1:** Age Distribution of methyl alcohol death.  
[Citation: Figure 3 Age Distribution of methyl alcohol death. (Ref: Kurtas, U. et al. The evaluation of deaths due to methyl alcohol intoxication. Biomedical Research (2017) Volume 28, Issue 8. Link: <http://www.alliedacademies.org/articles/the-evaluation-of-deaths-due-to-methyl-alcohol-intoxication.html>)]

Alcoholic Drinks are consumed in India to celebrate (at parties, official gatherings, social and even religious events) as well as to commiserate (to overcome stress and sadness, recession, to cope with financial or other losses). Hazardous drinking (binge drinking and solitary consumption to the point of intoxication) is the hallmark of chronic alcohol abusers. Alcohol abuse is a leading factor in many crimes, drinking behaviour and circumstances surrounding after-drinking (hip-flask) defence cases, drug facilitated sexual assault, and Drinking Driving accidents. The major individual harms related to alcohol are coronary heart disease, breast cancer, tuberculosis, motor vehicle accidents, liver cirrhosis and suicide. Heavy-drinking is associated with more frequent ill-health especially accidents and injuries, chest pain and heart problem followed by high blood pressure and poorer psychological well-being. For people aged 15–49 years, the leading risk factors for global disease burden worldwide are alcohol use, tobacco smoking including second hand smoke and high blood pressure.

Indian youth suffer frequent casualties after Methyl Alcohol poisoning from consuming Wines, Beer, Arrack, Country liquor, Indian made foreign liquor and different other branded alcoholic beverages Counterfeited for quick money illegally. The alcohol produced illegally is called illicit alcohol. They do not follow any set standards and thus have no quality control. The alcohol produced from these units is usually adulterated and may contain a highly fatal substance called methylated

spirit or methanol. This added methylated spirit can lead to death or blindness. Illicit alcohol also evades all national and state-level taxes and duties, thus making it very cheap and affordable. Illicit alcohol is produced under unregulated circumstances and is often adulterated with chemicals like methanol, organophosphorus compounds and ethanol to save costs. This adulteration makes it absolutely unfit for human consumption and could lead to blindness or even be fatal to the consumer.

Incidence of fatal outcome of these HOOCH Tragedies by Methanol has some unique features: Uniquely in Males, Mostly on Weekends, as Adult Males have tendency to party with alcoholic beverages like beer, whisky, brandy, rum and arrack on weekends. HOOCH word is formed by rearranging by shifting C in the chemical formula of toxic metabolite formic acid (HCOOH) due to metabolism of methyl alcohol by liver causing toxicity by- formic acid chemical formula is  $\text{CH}_2\text{O}_2$  - which can also be written as HOOCH. HCOOH is Formic acid derived from ants and toxic in nature in body, methyl alcohol turns into formaldehyde, that causes blindness, and then to Formic acid, all are toxic to humans. Victims often only seek medical care after a significant delay, mainly because there is a latent period between ingestion and toxic effects. Late medical care contributes to the high level of morbidity and mortality seen in many methanol poisoning outbreak. Because patients with methanol poisoning often need intensive medical care, outbreaks of methanol poisoning can rapidly overwhelm medical facilities.

*Q. What measures can our country take to prevent the epidemic of Blind drunks?*

- Put in place a national strategy and legal framework to reduce the harmful use of alcohol (see below).
- Use public health campaigns to promote awareness of the dangers of informally produced and illicit alcoholic drinks. These can be targeted towards particular high-risk groups e.g. alcohol-dependent individuals, tourists.
- Since early recognition of an outbreak is vital to improve outcome, ensure that medical professionals are trained in the diagnosis and management of methanol poisoning.
- Where mass methanol poisonings recur establish a protocol for the management of these outbreaks.
- Ensure accessible and affordable treatment is available for all.

- Provide support to victims particularly those at risk of recurrent events e.g. alcohol dependent individuals.

Fatal Hangover in Blinding Drunks causes rampant Hooch Tragedies every month in different corners of India:-

- March 03, 2019: In Assam, which faced its worst liquor tragedy in which 160 people died and more than 500 were affected, many of those who survived have lost their eyesight and are dealing with major health complications.
- Feb 11, 2019: UP Hooch tragedy: At least 116 died in Saharanpur, Kushinagar, Meerut and Haridwar.

**Table 1:** Liquor Tragedies in 21<sup>st</sup> Century India - The Terrible Timeline

Date	Location	Deaths
Jan 2015	Uttar Pradesh	32
Oct 2013	Uttar Pradesh	40
Feb 2012	Odisha	35
Dec 2011	West Bengal	170
Oct 2010	Punjab	12
March 2010	Uttar Pradesh	35
Feb 2010	Uttar Pradesh	13
Jan 2010	Andhra Pradesh	14
Sept 2009	Uttar Pradesh	29
July 2009	Gujarat	136
May 2009	West Bengal	20
March 2009	Delhi	12
Jan 2009	West Bengal	27
May 2008	Karnataka	180
March 2006	Odisha	22
Dec 2004	Maharashtra	87
Oct 2001	Uttar Pradesh	18

(Table Ref: Pillay, VV. *Textbook of Forensic Medicine and Toxicology*. 19<sup>th</sup> Ed. 2019. p 639)

Q. How do you know if you are suffering methanol poisoning?

Methanol poisoning in its early stages might be difficult to distinguish from inebriation from normal ethanol consumption. Severe symptoms do not usually occur until 24–30 hours after consumption and can include: abdominal pain, nausea, vomiting, breathing difficulty, blindness, blurred vision, seizures, and/or coma.

The word “Doctor” literally means “to teach others how to remain healthy”. So, to curb this fatal epidemic, Expert Doctors from Indian Society of Toxicology (IST), in association with Emergency Physicians of India, with Association of Physicians

of India (API) and Indian Society of Critical Care Medicine (ISCCM) have jointly organised National Toxicology symposium in RMRC Auditorium, Institute of Life Sciences, Bhubaneswar, Odisha on 7<sup>th</sup>–8<sup>th</sup> September 2019 discussed these preventive and curative updates for clinical practitioners managing Methanol Poisonings, thus saving lives from knives of autopsy, where there is no toxicologist. It will be helpful in avoiding Terrible Toxic Tragedies on future Timeline of India.

Retrograde Extrapolation is the mathematical method by which a person’s Blood Alcohol levels are estimated by projecting backwards from a later chemical test. But estimating blood methanol levels specifically is difficult to estimate, as the Widmark equation mentioned estimates serum alcohol levels, which includes alcohol congeners (methanol, propanolol, butanolol, butan-2-ol, isobutanol, 2-methylbutan-1-ol and 3-methylbutan-1-ol) along with ethanol circulating in blood of the patient who might be chronic abuser of commercial Alcohol. Minimum essential information necessary to make such estimations include the individual’s body weight, percent of alcohol in the drink, the number of alcoholic beverages consumed, the length of drinking period, and a given individual’s excretion rate based on his kidney and liver function status. Since it is often difficult to quantify the variables, extrapolation remains controversial.

## Conclusion

Methanol is cheap and readily accessible; therefore, it is one of the most common adulterants found in commercially available alcoholic beverages, especially in developing countries. Alcohol related Poisonings are Avoidable, if we educate the public on its harms and can “Prevent the Repent” of Fatal Predictable Epidemics.

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