

Review Article

Epidemiology, pattern and prevalence of alcohol consumption in India: need for public health action

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ABSTRACT

As we enter the year 2021, health and population related data related to the pattern, prevalence and epidemiological dimensions of alcohol consumption and its harmful use in Indian sub-continent needs time bound update. A non-systematic narrative review was attempted to identify consistent scientific and gray literature on the prevalence, pattern and repercussions on the alcohol consumption status among Indian adults and children. As the nation has no unified data system on the substance use behaviour of its residents, the review involved inclusion of the latest research articles from each state/ union territory being collected from an active search from PubMed, Google scholar and Europe PMC. Prevalence of alcohol consumption in India ranged from 10% to 60% with a predominant male predilection in agreement with previous studies. Peer pressure was perceived to be the most influential factor in promoting alcohol use with social occasions, urban background, family celebrations and 'staying away from family' playing additional role. Mere awareness of alcohol related complications was not assessed in most of the research items. Public health and administrative policies need to be focussed strongly reducing the free availability of alcohol among diverse geographical regions of the country. Policies and programmes are likely to be more effective if population heterogeneity is considered, and do address the wide range of modifiable risk and promoting factors at individual, community and social levels. Bringing public awareness with conventional and newer digital media will be contributive for both social and national productivity.

Keywords: Alcohol, Dependence, Prevalence, Public Health, Intervention

INTRODUCTION

Liquor has been in use in human communities since time immemorial. Alcoholic beverages were processed and devoured in almost all parts of the globe even before the british colonial expansion that has changed the cultural position of alcohol nearly far and wide.¹ Multiple advanced forms of liquor were made current, and a commodity made at a domiciliary and community level was progressively transformed into an industrial product available round the clock with omnipresence. As part of the present day of globalisation, this course continues in a rising trend in developing nations. In the context of India,

alcoholic beverages were known from ancient Vedic period, being used for adoration purposes, siddha and ayurvedic preparations, and generally taken as a tranquilizer.² Universally, harmful use of alcohol leads on to a mortality of around 3.3 million deaths per annum (5.9% of all causes of mortality), and 5.1% of the global burden of disease is strongly related to liquor consumption.³ Meanwhile accelerated globalization and economic liberalization are changing the social fabric and organizational structure of the Indian society and thus have a high impact on drinking patterns and cultures in the state as well. This article reviews literature on alcohol

use in India and the need for public health plan, action or intervention in multiple dimensions.

PATTERN AND PREVALENCE OF ALCOHOL ABUSE AND RELATED ILLNESS

India is a diverse nation with hefty variation in climate, vegetation, natural resources, culture and traditions. This variegation is also echoed in the types of alcoholic beverages prepared, procured and used up with assorted cultural meaning associated with liquor use. The most common forms of alcoholic beverages available are arrack (fermentation of rice/paddy or wheat), toddy (wine from palm), country liquor (arrack), illicit liquor, Indian made foreign liquor (IMFL), beer and imported liquor.⁴ According to WHO, traditional alcoholic beverages viz., arrack, toddy, country liquor contain about 20 to 40% of alcohol, whereas it is as high as 56% in illicit liquor thus making the latter a big menace to the country's health. Ingredients used in illicit liquor production are akin to those used in country liquor manufacture; yet, illicit liquor is more often adulterated with industrial methylated spirit and other adulterants posing huge detrimental effects on health. Adding on to the fire, illicit liquor is relatively cheaper than the licensed country liquor and thus more rampant among urban and rural poor community making them more vulnerable.⁵

Table 1: Alcohol per capita (+15) consumption (in litres of pure alcohol).⁶

	Average 2003-05	Average 2008-10	Change
Recorded	1.6	2.2	Increase
Unrecorded	2.0	2.2	Increase
Total	3.6	4.3	Increase
Total male/female		8.0/0.5	
South East Asian region	2.9	3.5	

In South-east Asian region, an increase in per capita pure alcohol consumption by over 50% between 1980 and 2000 was reported. Not surprisingly, per capita pure-alcohol consumption has escalated in an alarming way by 106.7% between 1970-1972 and 1994-1996 in India. Travelling in the same trend, comprehensive global burden of disease and injury attributable to alcohol abuse in terms of disability adjusted life years (DALYs) has reached 5.1%. Global information system on alcohol and health (GISAH) reports approximately 3.3 million deaths (5.9% of all deaths) annually attributable to the harmful use of alcohol.^{6,7} The following data of WHO indicates the rising crisis of alcohol use or abuse in India in the past decade (Table 2-3).⁸⁻³⁵

CONSEQUENCES OF ALCOHOL ABUSE

The issue of alcohol abuse in India is deeply rooted and has continued to affect not only health but also the social

and economic well being of the youthful population and thus circumlocutorily the whole nation's productivity. In view of WHO factsheet, roughly 200 diseases and injury conditions have shown causal relationship with harmful use of alcohol, not all cases detrimentally.³⁶ Not only quantity of liquor intake, but also patterns and trends of alcohol consumption, especially irregular heavy drinking, have been shown to be a deciding factor in multiple disorders. In almost all alcohol related disorders, a dose-response relationship to volume of alcohol consumption with risk of the disease increasing with increasing quantity of alcohol consumed has been evident in multiple studies with few exceptions viz., cardiovascular arena of disorders, notably coronary artery heart disease (CAHD) and cerebro-vascular accidents/CVA (stroke), type-2 diabetes mellitus, and unintentional injuries, wherein other dimensions of consumption than average quantity of consumption play a deciding role in determining outcome.³⁷

ALCOHOL HARM PARADOX

In common understanding, economically weaker sections consume relatively less alcohol in quantity overall but pose a significantly elevated levels of liquor-attributable risks the wealthier counterparts. This has been termed the 'alcohol harm paradox'.³⁸

ALCOHOL AND LIVER

Chronic liver diseases of any origin always have a poor outcome worldwide in terms of both morbidity and mortality. Keeping in view of the global demographic transition towards life style disorders, India being its epicentre of change, started a silent epidemic of Alcohol related liver disorders and non-alcoholic fatty liver diseases (NASH).³⁸ More worrisome is to find that, a stabilization for the past two to three decades in pure alcohol intake in economically developed nations, wherein a highly inimical tendency is being proclaimed from the struggling Asian and African nations (most chances of being underestimated because of poor reporting and surveillance systems). This is evident in a hospital based multi-centric study done in the peninsular India by Mukherjee PS et al on the pattern of chronic liver diseases (n=13014), showed about 30.4% of cases were alcohol related, followed by infective causes and NASH.

In 2012, global alcohol report of WHO proclaimed that, age standardised death rates (ASDR) of 39.5 per 1 lakh population and 19.6 per one lakh population were owing to alcohol related liver diseases (cirrhosis of liver). In view of of negligent national data on transplantation and their causal skeleton, extrapolation from series from multiple transplant centres all over the country revealed, hepatitis C and alcoholic cirrhosis as the major indications for the same posing both health and economic burdens on the community and the country.³

Table 2: Alcohol consumption pattern in India.

Ref. No.	Study site	Sample size	Prevalence (%)	Mean age of starting alcohol use (years)	Reason for intake	Major type of alcohol	Frequency of intake (major)
8	Sub-urban Delhi	110 male adolescents	55.6	13±3.5	Peer pressure	-	1-2 times/month
2	Rural Puducherry	850 adults of any age above 18 years	9.7	16 -20	Pain>tiredness	Beer	-
9	Bagalkot, Karnataka	395 medical students	20.5	18.32±2.84	Social occasions	-	-
10	North Goa	732 male habitual drinkers, aged 18 to 49 years	62.3 (monthly once or more times)	-	-	-	Monthly once
11	Guwahati, Assam	680 school students	36	13-16	Social occasions	Beer	-
12	Mumbai, Maharashtra	220 adults aged ≥45 years	18.8	-	Habit	Country liquor	Once/ week
13	Rohtak, Haryana	4,691 subjects aged ≥14 years	19.78	20.3±5	Sociable reason	Country liquor	-
14	Udupi, Karnataka	825 fishermen	45.6	-	Job related stress	-	-
15	Srikot, Uttarakhand	155 village residents	16.8	-	Male gender	-	Once weekly
16	Calicut (Kerala) & Chirala (Andhra Pradesh)	63 female sex workers	96	-	Sex related to profession	Rum	Almost daily
17	Bandardewa, Arunachal Pradesh	312 village inhabitantants of age >10 years	36.5	21.6±2	Peer pressure	IMFL	Twice weekly
18	Andaman Nicobar Islands	18,018 islanders of age ≥14 years	35 (males) 6 (females)	-	-	Homebrews (Toddy, Handia)	Once weekly or more
19	Ernakulam, Kerala	7650 school students of age 12- 19 years	15	13.6±2.4	Family members	-	Once/twice in 3 months
20	Sehore, Madhya Pradesh	3220 adults	23.8 (males) 0.6 (females)	-	-	-	-
21	Punjab	13,925 adults of age 11-60 years	10.9	-	-	-	-
22	Karauli, Rajasthan	213 mine workers 203 non miners	26 (miners) 10.3 (Non-miners)	10	-	-	-
23	Lucknow, Uttar Pradesh	3437 adults	4.2	-	-	-	-
24	Birbhum, West Bengal	36,611 adults	19 (males) 2.4 (females)	-	Peer pressure	Home-made rice beers	-

Table 3: Prevalence studies on alcoholism in India (states-wise).

Ref. No.	Site of the study	Sample size	Study participants	Prevalence (%)
25	Five Indian states viz., Andhra Pradesh, Maharashtra, Madhya Pradesh, West Bengal, and Kerala	6,088	Community based study involving Urban and rural dwellers of any age above 18 years	38.6
26	Bikaner, Rajasthan	328	Persons above age of 10	10.9
24	Birbhum, West Bengal	36,611	Adults of any age	19 in men, 2.4 in women
20	Sehore District, Madhya Pradesh	3,220	Adults of age ≥ 18 years	23.8
27	Ludhiana District, Punjab	1,732	Individuals aged 15 years and above in the study area	93.1
18	Andaman Nicobar islands, Union Territory	18,018	Subjects of age ≥ 14 years were chosen	35 in males 6 in females
8	Sub-urban Delhi	110	Male adolescents of age 11-19 years	55.6
28	Dibrugarh, Assam	650	Tea plantation workers of age 15-24 years	32.2
29	Buguda, Odisha	431	Individuals with age 18 years and above	38
30	Rural and tribal belts of Central Maharashtra	4,711	Adults aged 30 years and above	23
31	Dimapur, Nagaland	100	Adolescents of age 10-19 years	46.3
32	Eight medical colleges in India	150 UG and 55 PG students from each college	Students pursuing MBBS or Post Graduation in the selected medical colleges	16.6 in UG 31.5 in PG
19	Ernakulam, Kerala	7,560	School students in the age group of 12-19 years	15
33	Vellore, Tamil Nadu	345	Aged 18 years and above in kanniyambadi block, Vellore	46.7
34	West Kameng, Arunachal Pradesh	1,660	Adults of any age	50.2
35	Theni, Tamil Nadu	500	School students of age 15-17	31.06

ALCOHOL AND ADDICTIVE BEHAVIOUR

Pattern of abusive and addictive nature of alcohol and other substances have a very notorious behaviour to change with time. With a handful of states flagging prohibition on liquor, the free-flowing alcohol shops around the tiniest streets pose a great danger for the younger generations to fall prey for dependence and subsequently addiction. There is paucity for national policy on alcohol addiction and not surprisingly a country wide data on alcohol related mental illnesses though the prevalence ballooning day by day. In an interview based cross-sectional study conducted by Chavan et al in Chandigarh (N=59470) found about 69 per 1000 population was either drug or alcohol dependant in nature.³⁹

A similar study conducted at Bengaluru, by Gururaj et al recorded a prevalence of 320 per 1000 alcohol users (N=28,507) which escalated from 90 per 1000 population

by the same investigator at the same region two years back.⁴⁰ Though the alcohol consumption rate has come down in a meagre quantity as per the National family health survey data of 2005-06 and 2015-16, still miles to go in getting away with alcohol dependence. In a bird's eye view, It is evident that over 2006 to 2016, consumption of alcohol among men has fallen sharply in central and Northern states viz., Madhya Pradesh, Bihar, Uttarakhand, Haryana, West Bengal leaving peninsular India far behind in a bad shape.⁴¹

OTHER SEQUELAE OF ALCOHOL

Alcohol-related injuries have always been worrisome in India alike the western counterparts, where in the effective tackling and treatment of traumatic injuries is relatively not appreciable owing to the lacunae in skilled man power, basic infrastructure, efficient imposition of laws, and ill-fitting public health policies. In the sub-continent, alcohol abuse has a disproportionately high

correlation with (RTA) road traffic accidents and intentional self-harm and implicating as high as 20 per cent of traumatic brain injuries.⁴² A systematic review by Das A et al reiterated the aforesaid finding that a significant proportion of injured or killed road users in India had used alcohol before the accident.⁴³ Esser MB et al (2015) found about 83% of the study participants proclaimed to have had at least a single alcohol-related violence from a heavy drinker in their lives either from the spouse or father for that matter concerned, and not surprising, 50% of the victims reported either emotional (verbal) violence or neglect and 25% and 6% proclaimed to have experienced physical violence and sexual violence respectively.^{44,45} A study from Eastern India encompassing Jharkhand, Odisha and West Bengal found that women with alcoholic husbands experienced 5-13 times higher risk of domestic violence, varying by risk for physical, psychological and sexual dimensions.⁴⁵ Similarly multiple studies from India have found domestic intentional injuries and violence to be ranging from 18% to 70% with variation in the study methodology and tools applied.^{46,47} A steep fall in 'ever-married women who have ever experienced spousal violence' in National family health survey 2015-16 to 28.8% from 37.2% (of 2005-06 NFHS-3 data) is to be elated.⁴¹

Another notable factor that requires special mention is about the 'country liquor' or adulteration of methanol with ethanol (in view of cheapness of methanol and its ability to give early euphoria or kick to chronic drinkers). India is a perennial landscape for toxic methanol poisoning, a recent incident that cost about 102 deaths in Malwani, Mumbai city, Maharashtra and 2017 Ramgopalpur incident in West Bengal with at least six citizens kicking the bucket due to spurious liquor.⁴⁸ The campus of interest in all these cases is that the major cause of fatalities in almost every Methanol poisoning is due lack of awareness amongst the habitual drinkers and late arrival at the hospital after full blown development of metabolic acidosis, dyselektroemia and even coma.⁴⁹

In a meta-analysis on alcohol related suicidal ideation by Darvishi et al, at a global level including India based studies, recorded a significant association between suicidal ideation and alcohol use disorder with OR of 1.86 (CI: 1.38-2.35) and suicide attempt (OR=3.13; 95% CI: 2.45, 3.81); and completed suicide (OR=2.59; 95% CI: 1.95, 3.23).^{48,49} In a countrywide survey by Pandey et al, to find the correlation of alcohol use with sexually transmitted infection amongst country men found a blanket prevalence of about 2.5% with 26% amidst them using alcohol. The men who consumed alcohol had higher prevalence of STI (3.6%; 95% CI: 2.9–5.1) than those who did not consume alcohol (2.1%; 95% CI: 1.5–2.6). This statistical information is reinforced by a similar research by Saggurti et al in 2010 in Mumbai, putting daily alcohol drinkers four times more likely than those not consuming alcohol in the last month to have gonorrhoea (NG) and chlamydia (CT) infection and three

times more likely to have had a past history of exposure to herpes simplex virus-2 (HSV-2) and/or syphilis as determined by biological testing.⁵⁰

CONCLUSION

Does India need an alcohol ban? Adding on to the way ahead of an alcohol-free state, apex court of India ruled (December 15, 2016) a ban on State and Union Territories from granting licences for the sale of alcohol alongside the national and state highways county-wide, noting that drunken driving was the main culprit behind a large number of road traffic accidents (RTA) in the country is indeed on a 'res extra commercium' basis is heartwelcoming. Holding drug de-addiction programme (DDAP) of ministry of health and family welfare resulting in establishment of National drug dependence treatment centre (NDDTC) at AIIMS, New Delhi and similar centres for de-addiction is warranting to overcome this menace. Multicentric studies have established that heavy alcohol consumption increases the risk of blood pressure, cerebro-vascular accident (stroke) and cirrhosis of liver as discussed in the article earlier. It gains more attraction especially in terms of a developing nation like India, wherein people tend to drink so heavily. In this scenario, alcohol dependence/addiction tends to have both adverse health and socio-economic corollary, evading the vital resources away from basic necessities such as nutrition/food, shelter, clothing and schooling of the off springs. It also affects the welfare of other household members, especially the children and women dependant on the domiciliary head for the preceding. It is a well-known fact that the momentum of progress of a reserved who are dependent on the surplus it generates. Being an alcoholic rich nation, it is hard for the country to prosper both in economic affairs and in world health platform too. It is clear that a non pendular balance to be achieved in recreational use and renaissance of the public health and well-being.

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