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Quick Response Code:

Relation between age at first alcohol drink & adult life drinking patterns in alcohol-dependent patients

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Background & objectives: Age at first drink has its influence on later life drinking patterns. The association between age at first drink and adult alcohol consumption has not been studied in clinical population. This study was aimed to determine the age at first drink and its correlation with adult life drinking patterns in alcohol-dependent patients.

Methods: Adult participants with alcohol dependence were included from the inpatient and outpatient wards of a tertiary care de-addiction facility in India. Questionnaires administered were National Institute on Alcohol Abuse and Alcoholism-Quantity Frequency for alcohol and the Fagerstrom Test for Nicotine Dependence for tobacco.

Results: Of the 99 participants (92% males) with mean age 37±8.36 yr, mean age at first drink was 21.14±5.33 yr. After controlling for age, satisfaction with life scores and smoking, age at first drink showed a significant negative correlation with drinking days per week (r=-0.259, P=0.012), typical drink per day (r=-0.218, P=0.035) and maximum drinks in the previous month/year (r=-0.233, -0.223 and P=0.024, 0.031, respectively).

Interpretation & conclusions: Our study suggested that earlier age of first drink correlated with chronic heavy drinking patterns in later adult life in alcohol-dependent patients. This may have implications for alcohol control policies determining the age for legal consumption.

Key words Adolescent drinking - age at first drink - alcohol dependence - alcohol policies - heavy drinking

Alcoholism is attributed as a cause for 17 per cent of neuropsychiatric disorders among men in India[1]. Alcohol use is typically initiated in adolescence[2], both for its positive and arousal effects and to conform with peers. Adolescents drink twice as much as adults in a drinking setting[3]. A study from India suggests that there has been a substantial increase in adolescent drinking onset in more recent birth cohorts[4]. The risk-taking behaviour of adolescents coupled with the dynamic process of brain maturation contributes to heavy consumption[3]. Religion[5], culture, family history of alcoholism[6] and socio-economic factors[4] all play an important role in initiation and continuation of alcohol[7].

Early age at first drink is associated with an increase in later life alcohol complications including heavy drinking and alcohol-related injuries[4]. There is also a higher risk for developing alcohol dependence at later adult life[7,8]. It is postulated that early age of drinking onset is associated with less frequent use of alcohol-specific protective strategies, thus leading to alcohol-related problems[9]. This association reflects wilful rather than uncontrolled heavy drinking. Such a pattern is governed by poor decision-making and/or reward-processing skills[10].

In a community sample from south India, drinking before the legal age of 21 years was found to be associated with high-risk alcohol use[11]. However, such a finding has not been demonstrated in a clinical population with alcohol dependence. This study was undertaken to find out the correlation between age at first drink and later life alcohol drinking patterns in patients with alcohol dependence.

Material & Methods

Adult participants with alcohol dependence diagnosed clinically by International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD 10)[12] were selected from the inpatient and outpatient wards of a tertiary care de-addiction facility Centre for Addiction Medicine, National Institute of Mental Health and Neurosciences, Bengaluru, India. This cross-sectional study was designed with a primary intention of examining personality factors associated with relapse. The study was approved by the institutional ethics committee and written informed consent was obtained from all participants. Consecutive patients fulfilling inclusion criteria and willing for follow up were included. Sample size determination was done by examining personality factors associated with relapse. This study was conducted over a period of one and half years from January 2011 to May 2013. Patients with any other substance dependence other than alcohol and tobacco were excluded from the study.

Socio-demographic data were obtained during the first visit which included age, gender, education, employment status and marital status. Data on current smoking history were obtained using Fagerstrom Test for Nicotine Dependence[13]. Quantity and frequency of alcohol consumption, including age at first drink was assessed using the National Institute on Alcohol Abuse and Alcoholism-Quantity Frequency Questionnaire[14]. Satisfaction with life was assessed using a 5-item

questionnaire[15]. The Kuppuswamy's socio-economic status scale, revised for 2015 using the real-time update tool, was used for the socio-economic status classification[16,17].

Statistical analysis: As the legal age for alcohol consumption is 21 years in most of the Indian States, the age at first drink was categorized into two levels <21 and ≥21 years. Statistical analysis was done using R software (R foundation, Vienna, Austria). Chi-square test and independent sample *t* tests were used to compare the difference between the groups. Correlations were computed using Spearman correlations, and partial correlations were used for controlling variables.

Results

Of the 99 participants (n=91, 92% males), the mean age of presentation was 37±8.36 yr and the mean age at first drink was 21.14±5.33 years. Fifty three patients (53.53%) had their first drink at the age below 21 years. There were eight females, and among them, majority had an onset of drinking below 21 years (Table I).

Majority of the patients belonged to the upper-lower class (as per Modified Kuppuswamy scale). Among them, 56.92 per cent (n=37) reported an age at first drink lesser than 21 years. Of the 99 participants, family history was available for 87 patients, among whom 55 (63.21%) had a positive family history for alcohol dependence. Although not significant, a majority (n=31, 56.36%) of the participants who had a positive family history for alcohol dependence had their first drink before the age of 21 years (Table II).

Majority (n=79, 79.79%) were married in our study group; 27.27 per cent (n=27) of the patients had completed their high school. Hindus formed the major religious group, and among Muslims, age at first drink was higher (Table II).

People with early age at first drink had longer alcohol use duration (mean 17.94±8.65 yr, *P*=0.008) and also presented earlier to treatment (mean age of presentation 35.25±8.55 yr, *P*=0.019) when compared

Table I. Age at first drink and age at presentation		
Study participants	Age at persentation (yr)	Age at first drink (yr)
Total (n=99)	37.05±8.36	21.14±5.33
Males (n=91)	36.66±8.30	21.11±5.22
Females (n=8)	41.50±8.25	21.50±6.82
Values are mean±SD. SD, standard deviation		

Table II. Comparison of early onset versus late onset drinkers		
Participants	Age at first drink	
	<21 yr	≥21 yr
Participants, n (%)	53 (53.54)	46 (46.46)
Sex ratio (male/female)	7.83 (47/6)	22 (44/2)
Age of presentation (mean±SD), yr	35.25±8.55	39.13±7.72*
Alcohol use (yr)	17.94±8.65	13.57±7.46**
Satisfaction with life scores	27.02±4.69	26.74±5.52
FTND	5.96±3.14	5.76±3.28
Marital status, n (%)		
Single	11 (84.62)	2 (15.38)
Married	38 (48.10)	41 (51.9)
Separated	2 (66.67)	1 (33.33)
Divorced	1 (50)	1 (50)
Widowed	1 (50)	1 (50)
Education status, n (%)		
Illiterate	12 (66.67)	6 (33.33)
Primary school	13 (61.90)	8 (38.09)
Middle school	8 (61.54)	5 (38.46)
High school	12 (44.44)	15 (55.56)
Intermediate/post-high school diploma	7 (41.18)	10 (58.82)
Graduate/post-graduate	1 (33.33)	2 (66.67)
Religion, n (%)		
Hindu	46 (58.22)	33 (41.77)
Muslim	1 (14.28)	6 (85.71)
Christian	5 (41.67)	7 (58.33)
Jain	1 (100)	-
Socio-economic status, n (%) (modified Kuppuswamy scale)		
Upper	2 (66.67)	1 (33.33)
Upper middle	1 (14.29)	6 (85.71)
Lower middle	12 (57.14)	9 (42.86)
Upper lower	37 (56.92)	28 (43.08)
Lower	1 (33.33)	2 (66.67)
Family history, n (%)		
Present	31 (56.36)	24 (43.64)
Absent	14 (43.75)	18 (56.25)
P *<0.05, **<0.01 compared to <21 year group. FTND, Fagerstrom Test for Nicotine Dependence; SD, standard deviation		

with people who had their first drink at a later age. Majority of the patients (n=51, 51.5%) sought treatment because of financial debts and family issues as a result of alcohol use. Medical consequences associated with alcohol use were the second most common cause (n=31, 31.3%) for seeking treatment. These included loss of weight, loss of appetite and sleeplessness. People who initiated alcohol use at an early age had chronic heavy drinking patterns in adult life (Figs 1 & 2).

After controlling for factors which could influence current drinking patterns such as age, satisfaction with life scores and smoking, age at first drink had significant negative correlations with drinking days per week (r=-0.259, P=0.012), typical drink per day
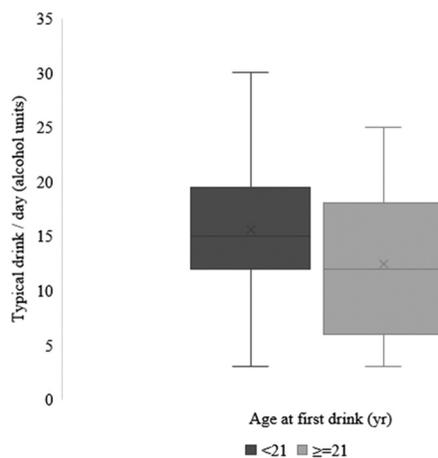
Fig 1. Age at first drink and typical drink per day. Box-whisker plot depicting people who initiated alcohol at less than 21 years developed heavy drinking pattern in later adult life in terms of typical alcohol drink consumed per day. X marks depict mean values.

Fig 2. Age at first drink and maximum drinks in last month/year. Box-whisker plot depicting people who initiated alcohol at an early age developed chronic heavy drinking patterns in later adult life in terms of maximum alcohol drinks consumed last month/year. X marks depict mean values.

(r=-0.218, P=0.035) and maximum drinks previous month/year (r=-0.233, -0.223 and P=0.024, 0.031, respectively) (Table III). In a subgroup analysis of age at first drink in family history positive and negative patients (n=56, n=31, respectively), the correlations were not significant (Table IV).

Discussion

In men aged more than 15 years who drink, the total per capita alcohol consumption is 32.1 l of pure alcohol[18]. Among 15-49 yr old men in India, the prevalence of daily and weekly use of alcohol was 9.4 and 26.7 per cent, respectively[19]. Legal age for alcohol consumption in India varies in different States from 18 to 25 years[19,20]. In majority of the States, the legal age of alcohol consumption is 21 years.

There have been debates regarding reducing legal age of alcohol consumption[21-23]. The range of morbidities associated with chronic alcohol use cannot be overlooked. Although studies from India have assessed age at first drink[24], the correlation of it with later life dependence has been reported only in a few[11].

A twin study suggested that early age of alcohol initiation was because of shared genetic factors[25]. However, in our study, the correlation between age at first drink and current alcohol consumption measures lost significance when only patients with family history of alcohol dependence were considered. Thus, family history was not a confounder in our study. Although family history does not imply a purely genetic predisposition, it is still one of the strong genetic mediators.
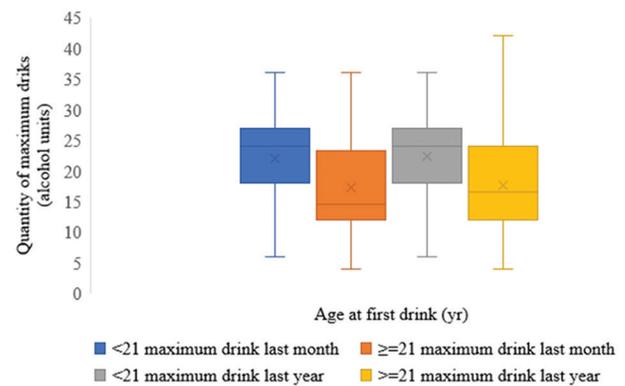
In our study, a significant negative correlation of age at first drink with both quantity and frequency of alcohol intake in later adult life was observed. People who started drinking early not only drank more on a typical day but also consumed maximum drinks frequently. Genetic predisposition brings in the vulnerability for dependence making the direct neurotoxic effects of alcohol more pronounced in adolescent heavy drinkers[26]. Exposure of the maturing brain to alcohol, an environmental toxin especially when bingeing makes the second-hit in these genetically predisposed individuals[27]. This makes age at first drink one of the important environmental factors in the gene-environment relationship leading to alcoholism.

The dose-dependent effects of alcohol on cardiovascular[28], gastrointestinal[29] and endocrine[30] complications are well known. Early exposure of alcohol increases the number of years of exposure. This coupled with impairments in neural integrity, plasticity and maturation processes[31] substantially increases the load of alcohol-related morbidities. Early life alcohol initiation may be one of the factors which increases the expression of genes related to alcohol dependence[32]. This can be modified by delaying the initiation of alcohol consumption.

Limitations of our study included hospital-based study with self-rating of alcohol consumption measures, small sample size which was of predominantly males, correlational nature of study and recall bias for age at first drink. Another limitation was that potential confounders such as childhood conduct problems and antisocial behavior, family circumstances and adverse

Table III. Correlation between age at first drink and alcohol-quantity frequency measures			
Variable	Mean±SD	Correlation coefficient (P)	Correlation coefficient after controlling for variables[*] (P)
Drinking days/wk	6.66±1.11	−0.259 (0.010)	−0.259 (0.012)
Typical drink (alcohol units)	14.11±7.19	−0.287 (0.004)	−0.218 (0.035)
Maximum drinks last month (alcohol units)	19.81±10.13	−0.333 (0.001)	−0.233 (0.024)
Maximum drinks last year (alcohol units)	20.21±10.10	−0.318 (0.001)	−0.223 (0.031)
Frequency of maximum drinks in last year (number of times)	6.67±8.04	−0.194 (0.057)	−0.201 (0.052)

[*]Controlled for age at presentation, satisfaction with life scores and smoking (FTND scores).
FTND, Fagerstrom Test for Nicotine Dependence

Table IV. Correlation between age at first drink and alcohol - quantity frequency measures in family history subgroups		
Variable	Family history	
	Positive (n=56)	Negative (n=31)
Drinking days/wk	−0.116 (0.396)	−0.087 (0.643)
Typical drink (units of alcohol)	−0.130 (0.338)	−0.173 (0.353)
Maximum drinks last month (units of alcohol)	−0.188 (0.166)	−0.208 (0.260)
Maximum drinks last year (units of alcohol)	−0.212 (0.117)	−0.115 (0.537)
Frequency of maximum drinks in last year (number of times)	−0.193 (0.161)	−0.042 (0.824)

childhood events which could influence current drinking were not assessed in this sample.

Whether family history increases the vulnerability to seek out alcohol at an earlier age should be examined in the future research with larger samples. Studies focusing on gene-environment interactions should also be conducted, taking age at first drink as an environmental factor influencing the expression of alcohol-related genes.

In conclusion, our results showed that age at first drink, an important modifiable environmental risk factor substantially increased the severity of alcohol dependence and alcohol-related morbidity in later adult life. Our study suggests that earlier age at first drink may lead to chronic heavy drinking patterns in later adult life. In that case, delaying the first drink may act as a protective factor with regard to developing alcohol use disorders and related morbidity.

Acknowledgment

Conflicts of Interest: None.

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