

ORIGINAL ARTICLE

Assessment and Comparison of Psychological Parameters of Alcohol Craving in Alcohol Dependence, Social Drinkers and Non-drinkers Using Visual Paradigms*Sadeq Qureshi¹, Nitin D. Bhoge², Ramesh S. Patil³*¹*Department of Psychiatry, JIU's Indian Institute of Medical Science and Research, Warudi, Jalna- 431202,*²*Department of Psychiatry, ³Department of Community Medicine, Ashwini Rural Medical College, Hospital and Research Centre, Kumbhari, Solapur – 413006, Maharashtra, India.***Abstract:**

Background: The present study was planned to assess socio-demographical differences between alcohol dependent, social drinkers and non-drinkers and comparison of subjective craving between alcohol dependent, social drinkers and non-drinkers. *Material and Methods:* The study was conducted in specialty mental health facility for duration of one year. The study consisted of three comparative groups. Each group consisted of 30 consecutive patients as per the inclusion and exclusion criteria were enrolled for the study. Informed consent was taken after explaining the nature of the study in detail. Alcohol use screening was done based on Alcohol Use Disorder Identification Test (AUDIT) whereas the severity of withdrawal was assessed using the Clinical Institute Withdrawal Assessment (CIWA) scale. *Results:* The mean age in alcohol dependent patients was 35.10 (± 9.4) whereas in social drinkers the mean age was 37.43 ± 9.4 . The mean age in non-drinking subjects was 30.5 ± 8.6 . The mean ACQ score in alcohol dependent group, social drinkers and non-drinkers was 32.76, 14.50 and 12.46 respectively. Thus, the alcohol dependents reported more subjective craving once alcohol related visual cues were presented followed by social drinkers. There is highly significant difference between three groups ($p < 0.0001$). *Conclusion:* Our study concludes that socio-demographic parameters in alcohol dependent patient differ from social drinkers. On presentation of visual cues, the alcohol dependent subjects reported maximum subjective craving as compared to social drinkers and non-drinkers.

Keywords: Alcohol craving, social drinkers, Non-drinkers, visual paradigms

Introduction:

India is generally regarded as a traditional 'dry' or

'abstaining' culture. The prevalence of alcohol use is low; estimated at 21% among adult males, and less than 5% among women [1, 2]. The per capita consumption is 2 liters of absolute alcohol equivalent per adult per year, and adjusting for undocumented consumption (illicit beverages and tax evaded products account for 45-50% of total consumption), this is likely to reach 4 liters [2,3]. 'Dry' cultures are known to be predisposed to deviant, unacceptable and anti-social behavior related to alcohol use as well as chronic disabling alcoholism [4]. Repeated observations have documented that more than 50% of all drinkers in India satisfy criteria for hazardous use. The typical consumption pattern is one of heavy solitary drinking, involving predominantly spirits and usually more than 5 standard drinks per occasion [5].

Alcohol addiction is increasingly regarded as a chronic relapsing disorder [6]. Alcohol-related problems account for over a fifth of hospital admissions in India, but are under recognized by primary care physicians. Alcohol misuse has a disproportionately high association with deliberate self-harm, high-risk sexual behavior, HIV infection, tuberculosis, esophageal cancer, liver disease and duodenal ulcers. Alcohol consumption has been implicated in over 20% of traumatic brain injuries [7].

Although craving has a complexity in definition but craving for a drug may be defined as a strong desire to crave, acquire and use drug, and may be evoked even after periods of sustained abstinence by exposure to stressful situations, to drug, or to environmental cues

previously associated with drug use [8]. The expert committee on alcohol and the expert committee on mental health of the world health organization (1954) defined craving as an “urgent and overpowering desire, or irresistible impulse”. There is no unique definition of this phenomenon or a consensus in regards to its manifestation or significance and authors have comprehended craving in different ways [9-12].

A common assumption about addictive behavior is that, addicts are particularly vulnerable to drug use when in the presence of stimuli related to previous episodes of use [9,13,14]. This idea most probably reflects the everyday observation that addicts seem to use drugs or relapse more readily in environments associated with prior drug use. The cue-reactivity paradigm, which monitors addicts' reactions to various drug-related stimuli, has been used widely over the past several decades to explore this relationship systematically [15-17].

Craving can be evoked with different cues in laboratory settings including verbal cues, videos, imagery evoking scripts, pictures etc., physiological changes such as changes in level of blood pressure, heart rate, withdrawal signs, and psychological changes such as changes in affect and mood that may substantially contribute to relapse and impact treatment procedure negatively [18-24].

Craving is the most widely studied subjective measure of reactivity, and a great many studies have demonstrated that craving increases in response to exposure to alcohol cues [13, 25-30].

Craving assessment is crucially important, because craving is a useful concept that may help clinicians and researchers evaluate treatment success and predict relapse. Improved measurement of craving therefore may lead to more accurate relapse predictions and, subsequently, to more effective treatment and clinical care.

Keeping above facts in the mind, the present study was planned to assess socio-demographical differences between alcohol dependent, social drinkers and non-drinkers and to compare subjective craving between alcohol dependent, social drinkers and non-drinkers.

Material and Methods:

The study was conducted in a specialized mental health facility from 2012 to 2013. The study consisted of three comparative groups. In each group 30 consecutive patients were enrolled as per the inclusion and exclusion criteria. Informed consent was taken after explaining the nature of the study in detail. Institutional Ethical committee clearance was obtained prior to the study.

Patients providing informed consent and ability to speak and understand English, Hindi or Telegu. Patients without any cognitive deficits or any other axis I or axis II diagnosis were included in the study.

Group a: Alcohol dependent: Patients who satisfy the criteria of alcohol dependence syndrome according to DSM IV TR criteria and patient who underwent detoxification and are abstinent from alcohol since last 14 days (no withdrawal features).

Group b: Social drinkers: Males drinking less than 21 units per week or Females drinking less than 14 units per week and patients who do not satisfy the criteria of alcohol dependence syndrome according to DSM IV TR.

Group c: Non-drinkers: Males and females of any age never used alcohol till the date of assessment and patients who do not satisfy the criteria of alcohol dependence syndrome according to DSM IV TR.

Exclusion criteria in either of the groups includes: Presence of chronic physical illness (neurological illness, CVA, head injury), organic mental disorder or active medical condition that could confound diagnosis of clinical characterization of psychopathology, patient in alcohol withdrawal delirium, patients on anti-craving agents and mental retardation or intellectual subnormality or other organic brain syndromes.

Data collection procedure: Each group consisted of 30 patients, as per the inclusion and exclusion criteria were enrolled for the study. Informed consent was taken after explaining the nature of the study in detail. These patients were admitted as part of deaddiction and rehabilitation programme for minimum of 28 days. Alcohol use screening was done based on Alcohol Use Disorder Identification Test (AUDIT) whereas the severity of withdrawal was assessed using the Clinical

Institute Withdrawal Assessment (CIWA) scale [31]. Each patient after 14 days was exposed to visual cues in the form of photograph/video of alcohol and alcohol related activities for example a beer bottle, a bar, people drinking, people partying, etc. for a period of 10 minutes. The photographs were obtained from International Affective Picture System (IAPS) NIMH centre for attention and emotion. Immediately after the procedure assessment of craving would be done with the help of structured questionnaire like Alcohol Urge Questionnaire which measures the subjective state of craving.

Tools: 1) Semi structured proforma 2) Alcohol Use Disorders Identification Test (AUDIT): It is brief alcohol screening instrument with a growing track record of reliability and validity across different populations and clinical setting [31]. In an international (10 nations) study of alcohol abusers in a primary healthcare setting, the AUDIT is demonstrated to have good reliability, concurrent validity, and good to excellent sensitivity and specificity ratings for problem drinking [32].

3) Clinical Institute Withdrawal Assessment of Alcohol Scale Revised (CIWA-AR): The best known and most extensively studied scale is the Clinical Institute Withdrawal Assessment - Alcohol (CIWA-A) and a shortened version, the CIWA-A revised (CIWA-AR). This scale has well- documented reliability, reproducibility and validity, based on

comparison to ratings by expert clinicians [33].

4) Alcohol Craving Questionnaire-Short Form-Revised (ACQ-SF-R): It contains 12-items from the 47-item Alcohol Craving Questionnaire (ACQ-NOW) developed to assess craving for alcohol among alcohol users in the current context (right now). Items were derived from the initial validation study of the ACQ-NOW administered to 219 subjects who had used alcohol at least once in the last 30 days. The ACQ-SF-R contains 12 items strongly correlated with the four subscales and total ACQ [22].

6. International Affective Picture System: International affective picture system (IAPS), pronounced “eye-aps”; (Lang, Bradley, & Cuthbert, 2005), a large set of emotionally evocative color photographs that includes pleasure, arousal, and dominance ratings made by men and women. Numerous studies over the past 15 years have explored subjective, psycho-physiological, behavioral, and neurophysiologic reactions when viewing these affective stimuli [34].

Statistical analysis: Descriptive statistics such as mean, SD and percentage was used to present the data. Comparison of socio-demographic parameters between the groups, analysis of variance (ANOVA) was used for continuous variable and chi-square test for categorical variable. A p-value less than 0.05 were considered as significant. Data analysis was performed by using software SPSS v20.0.

Results:

Table No.1: Socio demographic parameters of the three study groups

Parameters	Group A Alcohol dependent patients		Group B Social drinkers		Group C Non drinkers	
	Mean (%) n=30	Standard deviation	Mean (%) n=30	Standard deviation	Mean (%) n=30	Stand deviation
Socio-demographic parameter						
Age in years	35.10	9.419	37.43	9.493	30.50	8.657
Age of first drink	20.86	3.684	30.33	7.673	-	-
Age of alcohol dependence	23.53	4.012	-	-	-	-
Total years of alcohol use	14.26	8.021	-	-	-	-
Average no. Of relapse of alcohol	2.833	1.289	-	-	-	-

No of previous admission	1.933	1.112	-	-	-	-
Hinduism	28 (93.33)	-	26 (86.66)	-	25 (83.34)	-
Islam	02 (6.67)	-	04 (13.34)	-	05 (16.67)	-
Married	18 (60)	-	24 (80)	-	21(70)	-
Single	12 (40)	-	6 (20)	-	9(30)	-
Urban	20 (66.66)	-	24 (80)	-	25 (83.34)	-
Rural	10 (33.34)	-	06 (20)	-	05 (16.67)	-
Employed	12 (40)	-	26 (86.66)	-	30 (100)	-
Unemployed	18 (60)	-	04 (13.34)	-	00	-
Family history of alcohol	23 (76.67)	-	08 (26.67)	-	06 (20)	-
Yes	07 (23.34)	-	22 (73.33)	-	24 (80)	-
No						
Family history of psychiatric illness	05 (16.67)	-	06 (20)	-	02 (6.67)	-
Yes	25 (83.33)	-	24 (80)	-	28 (93.34)	-
No						

Age: The mean age in alcohol dependent patients is 35.10 ± 9.4 years whereas in social drinkers the mean age is 37.43 ± 9.4 years. The mean age in non-drinking subjects is 30.5 ± 8.6 years. There was a statistical significance in age ($p=0.01$) between the three groups. Nondrinkers showing mean age less as compared to alcohol dependents and social drinkers.

Religion: In alcohol dependent group 28(93.33%) patient belong to Hindu religion, where as in social drinkers 86.67% where Hindus. In the non-drinkers 83.33 % patient were Hindus. There was no any statistically significant difference between the 3 groups when religion was compared ($p=0.48$).

Marital status: In the alcohol dependent group 60% of the patients were married while in social drinkers 80% of patients were married, 70% of the non-drinkers were married. In all the 3 groups no divorced or separated individuals were reported. There was no any statistically significant difference between the 3 groups when marital status was compared ($p=0.24$).

Employment status: In the alcohol dependent group, 60% of the patients were unemployed in the last 1 year, whereas only 13.67 % of social drinkers were unemployed. Interestingly none of the non-drinkers were unemployed. There is a statistically significant difference between the 3 groups when employment status was compared ($p=0.0001$).

Address: In the alcohol dependent group, 66.67% of the patients were residents of urban area, whereas 80% of social belong to urban background. 83.34% of non-drinkers were from urban background.

There is no any statistically significant difference between the 3 groups when residential address was compared ($p=0.27$).

Family history of psychiatric illness: 83.33% of alcohol dependent patient did not report family history of psychiatric illness. In the social drinkers 80 % did not report family history of psychiatric illness while 93.34% of non-drinkers were without any family history of psychiatric illness. There is no any statistically significant difference between the 3 groups was found when family history of psychiatric illness was compared ($p=0.31$).

Family history of alcohol: 23 out of 30 (76.67%) alcohol dependent patient revealed positive family history alcohol use in the first degree relative as compared to only 8 out 30 (26.67%) in the group of social drinkers. In the non-alcohol dependent subjects 6 out of 30 (20%) had positive family history alcohol use in the first degree relative. There is a statistically significant difference between the 3 groups ($p=0.0001$).

Comparison of subjective craving in the 3 groups: The subjective craving between the 3 groups was assessed using a paper and pencil test using an Alcohol Craving

Questionnaire (ACQ/AUQ) wherein the subject had to report his desire for alcohol after the visual cues in the form of alcohol related photos were presented to them.

Parameter	Alcohol dependent patients	Social drinkers	Non drinkers
Mean ACQ score	32.76	14.50	12.46
Standard deviation	7.34	1.503	0.90

Source of Variations	df	Sum of Squares	Mean Squares	F Ratio	Probability
Between Samples	2	7498.9	3749.5	197.4	0.000
Within Samples	87	1652.3	18.99	-	-

Sr. No	Average	(n)	Shapiro Wiik	Mean	M.S	Variance	Std. Error
	Average	30	-	19.911	18.992	-	0.796
1	Alcoholic	30	0.981	32.767	1563.367	53.909	0.796
2	Social Drink	30	0.916	14.500	65.500	2.259	0.796
3	Non Drinker	30	0.563	12.467	23.467	809	0.796

The mean ACQ score in alcohol dependent group, social drinkers and non-drinkers was 32.76, 14.50 and 12.46 respectively. Thus, the alcohol dependent reported more subjective craving once alcohol related visual cues were presented followed by social drinkers. There is highly significant difference between three groups ($p < 0.0001$). The finding also suggests that alcohol dependent show more subjective or cue-based craving after alcohol related visual cues.

Discussion:

One of the major problems in the treatment of alcohol dependence is the propensity for relapse to drinking. Such relapse has been reported in up to 90% of alcohol dependents during the 1-to-2-year period after therapeutic treatment [35]. High levels of craving for alcohol are associated with this increased probability of relapse [36]. Early perspectives on alcohol craving focused on the subjective nature of craving i.e, craving was viewed as an experience that could only be accessed through the verbal report of the alcohol dependent. Consequently, the accuracy of most craving indices was limited by the ability and willingness of the individual alcohol dependent to accurately report his or her personal experience.

Instruments that assess such autonomic responses to alcohol-related cues are particularly relevant to theories of craving that postulate a role for classical conditioning. In everyday clinical practice, therapists usually administer single item instruments on which the patient reports his or her level of subjective craving. Recently many subjective craving questionnaires have been developed like, alcohol urge questionnaire, alcohol craving questionnaire, obsessive compulsive drinking scale [22,36,37].

The above literature forms the basic idea about our study i.e., assessing the subjective and objective parameters of craving in alcohol dependent individuals, social drinkers and non-drinkers. The assessment of craving was done by using visual cue reactivity (visual paradigms).

Review of literature suggested that no such studies have been conducted in Indian population. This further motivated us to conceptualize and carry out the study.

Socio-demographic parameters: The study sample showed mean age in alcohol dependent group was 35.10 years with a standard deviation of 3.684, while the mean age in social drinkers was 37.43 years with standard deviation of 9.4. The mean age in non-drinkers was 30.50 years with standard deviation of

8.6. Analysis of variance (ANOVA) test shows a statistical significance in age ($p=0.01494$) between the 3 group. Non-drinkers showing mean age less as compared to alcohol dependents and social drinkers. The mean age of alcohol dependent in the meta analysis conducted by Brain Carter and S T Tiffany included 14 alcohol related studies ($n=558$) reported a mean age of 39 years [38], while in another study conducted by Eun lee et al, the mean age in alcohol group was 38.5 years while in social drinkers the mean age was 38.7 [39]. Our study reported slightly younger people with alcohol dependence.

The study was conducted in an alcohol de-addiction centre with facility of admission only to male patients. This forms a limitation of the study. Thus, the current study cannot be generalized to female alcohol dependent patients. In alcohol dependent group, 28(93.33%) patients belong to Hindu religion, where as in social drinkers 86.67% were Hindus. In the non-drinkers 83.33 % patient were Hindus. ANOVAs test between the 3 groups did not reveal any statistically significant difference ($p=0.49336$) between the 3 groups when religion was compared. This finding represents the demographic characteristic of Indian population.

In the alcohol dependent group, 60% of the patients were married while in social drinkers 80% of patients were married. 70% of the non-drinkers were married. In all the 3 groups no divorced or separated individuals were reported. ANOVAs test between the 3 groups did not reveal any statistically significant difference ($p=0.24577$) between the 3 groups when marital status was compared.

In the alcohol dependent group, 60% of the patients were unemployed in the last 1 year, whereas only 13.67 % of social drinkers were unemployed. Interestingly none of the non-drinkers were unemployed. ANOVA test between the 3 groups did reveal a statistically significant difference ($p=0.0001$) between the 3 groups when employment status was compared. This suggests that alcohol dependent patients are more likely to be unemployed probably due alcohol related health hazards. Thus, our study postulates that alcohol

addiction results in significant occupational dysfunction.

In the alcohol dependent group, 66.67% of the patients were residents of urban area, whereas 80% of social drinkers belonged to urban background. 83.34% of non-drinkers were from urban background. ANOVA test between the 3 groups did not reveal any statistically significant difference ($p=0.27818$) between the 3 groups when residential address was compared. As the study was conducted in a tertiary private psychiatric institute our study included many people from the urban background.

Twenty-three out of 30 (76.67%) alcohol dependent patient revealed positive family history of alcohol use in the first degree relative as compared to only 8 out 30 (26.67%) in the group of social drinkers. In the non-alcohol dependent subjects 6 out of 30 (20%) had positive family history of alcohol use in the first degree relative. During the ANOVAs analysis the comparison between the 3-groups showed statistically significant difference ($p=0.0001$). This represents the genetic influence on the alcohol use disorder. Many studies have reported 4 to 6 times more prevalence of alcohol dependence with positive family history of alcohol dependence in first degree relative (schuckit ma).

83.33% of alcohol dependent patient did not report family history of other psychiatric illness. In the social drinkers 80 % did not report family history of psychiatric illness while 93.34% of non-drinkers were without any family history of psychiatric illness. ANOVAs test between the 3 groups did not reveal any statistically significant difference ($p=0.31829$) between the 3 groups when family history of psychiatric illness was compared. Relationship between age of first drink and craving parameters: Alcohol dependent patients in our study showed that the age of first drink in alcohol dependent patient was 20.86 years with a standard deviation of 3.68 while in case of social drinkers it was later i.e., 30.33 years with standard deviation of 7.67.

In a study conducted in north India the average age of first drink in alcohol dependent patient was 21 years similar to our study [40].

The age of first drinking in the social drinkers was

reported in our study to be around 30 years i.e., 10 years later as compared to alcohol dependent patients. Thus, our study suggests that the earlier the age of the first drink, the more the chance of patient will become alcohol dependent. When the age of first drink was compared to severity of alcohol use and severity of alcohol withdrawal it was found that their parameters are inversely related (both the correlation as well as regression coefficient are negative) i.e., Earlier the age of first drink, more is the severity of alcohol use (AUDIT) as well as more is the severity of alcohol withdrawal.

On comparing subjective craving with age of first drink we found that the correlation coefficient and regression coefficient are in negative thus suggesting an inverse but a weak correlation. Our study concludes that early the age of onset more is the subjective craving when

exposed to alcohol related visual cues.

Further research: Considering the magnitude of alcoholism in India, it is of paramount importance that more and more research methodologies are constituted for understanding alcoholism. Future research should be focused on treatment and prevention of alcoholism.

Conclusion:

Our study concludes that socio-demographic parameters in alcohol dependent patient differ from social drinkers. On presentation of visual cues, the alcohol dependent subjects reported maximum subjective craving as compared to social drinkers and non-drinkers. More severe the alcohol use and withdrawal more severe will be subjective craving.

Conflict of Interest - Nil

Sources of Support - Nil

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