

A Study of Psychosocial Factors and Personality Traits Associated With Emergence of Psychotic Disorder in Patients with Alcohol Dependence.

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I. Introduction

Alcohol is the most commonly used and widely abused psychoactive substance. Alcohol dependence syndrome is a chronic progressive disorder. In psychotic syndrome due to alcohol use, thought disturbances such as delusion, perceptual disturbance such as hallucination and mood symptoms like depression, mania should be prominent.

This study was undertaken to identify factors like dependence severity, family history stressful life events, demographic factors and personality profile that may be associated with psychotic disorder due to alcohol use.

Alcohol induced psychotic disorder is generally considered that it is acute in onset characterized by auditory hallucination which is mostly threatening in nature or derogatory in nature .and also presented with paranoid types of delusions (Seitz 1951, Sokya 1988), The psychotic symptoms mostly disappear within a week. But in some patients it tends to be chronic in nature if they continued to drink alcohol (Glass 1989)

Benedetti (1952) found that all the patients developed psychotic symptoms in acute onset. About 30% of patients had a relapsing course and relapse occurred more often in the patients who developed a chronic illness. Interesting to note is that a minority of patients continued to experience hallucinations in spite of abstinence whilst others were resistant to relapse in spite of ongoing drinking. He found that ten percent of patients had delirium and 80% of the patients recovered completely within 6 months of abstinent period. The remaining who were all chronic developed to schizophrenia and among the chronic patients 30% developed dementing illness (Glass, 1989)

Alcohol induced psychotic disorder different course from schizophrenia as it is recovered completely within 6 months of period (Burton-Bradley,1958)

Alcohol hallucinosis was an acute illness with complete remission in weeks or months, positive family history of schizophrenia. (Victor & Hope ,1958)

Johansson (1961) compared alcohol withdrawal delirium with psychosis due to alcohol use. She found that alcohol withdrawal delirium is more in older population significantly had history of head injury, better socially equipped than patients with alcoholic hallucination.

Surawicz (1980) attempted to differentiate alcoholic hallucinosis from paranoid schizophrenia by enumerating many points. But Ilana B Glass suggested that the similarities rather than differences between paranoid schizophrenia and alcoholic hallucinosis would be a more fruitful area for investigation.

Cutting (1978)

In his retrospective study the nature of alcoholic induced psychosis he found that most of them had hallucination.

Soyka (1988, 1990) found difference in course and clinical picture between comparing alcohol induced psychosis with alcohol withdrawal delirium They did not find difference in age and sex among these group. When comparing psychopathology higher percentage of patients with alcohol induced psychosis had delusions of reference, persecution, auditory hallucinations, and anxiety than compared to alcohol withdrawal delirium group Depression and suicidal ideation were common to both alcohol withdrawal delirium and hallucinosis groups But more patients with alcohol induced psychosis tried to commit suicide.

Patients were diagnosed according to ICD-9 and DSM-III. Patients with schizophrenia and a history of alcohol or drug abuse and patients with "organic mental disorders" were excluded from the study. Although formal thought disorders were observed in both groups of patients, the reported frequencies were generally low.

Restricted affect ($p<0.05$), ambivalence ($p<0.001$), and suspiciousness ($p<0.001$) were reported more often in patients with schizophrenia. Disorders of ego were the most distinct psychopathological disturbance that differed between the groups. No ego disturbances were reported in 70% of alcohol hallucinosis patients compared to 13% in patients with schizophrenia. When comparing the schizophrenia group with the alcohol hallucinosis group, thought broadcasting, thought insertion and feelings of alien influence all presented significantly more in patients with schizophrenia. More of visual hallucination in alcohol induced psychosis compared to schizophrenia patients.

Tsuang (1994)

In his study was designed to evaluate the characteristics of male patients with a history of alcohol hallucinosis whose illness was independent of major psychiatric disorder or other drug use. A group of patients with a history of alcohol hallucinosis ($n=48$) was compared with a group of alcoholic patients ($n=484$) without a history of hallucinations. No significant differences on demographic data such as age, educational level, marital status or employment were found between the groups.

Patients with a history of alcohol hallucinosis were significantly younger at their age of first occurrence of major problems related to alcohol. They also reported a higher average and greater maximum quantity of alcohol drinks per day. Their lifetime drug consumption history indicated that patients with alcohol hallucinosis had higher rates of drug experimentation and higher mean number of drugs used. Interestingly, a higher percentage of men with alcoholic hallucinosis had histories of depression lasting more than 2 weeks. First degree relatives with histories of schizophrenic disorders were similarly represented in both groups, supporting the view that alcohol hallucinosis is independent of a schizophrenic syndrome.

It is interesting to note that not all authors agreed to the concept of a distinct syndrome caused by alcohol. Debate about the nature of the disorder has characterized in the literature and continued to present for many years (Glass, 1989).

The controversy mainly revolves around etiological and phenomenological aspects concerning the disorder. These doubts include: whether hallucinations other than auditory are present, whether consciousness is always clear, whether orientation is completely intact, whether there are signs of cognitive impairment and what the natural course of the disorder entails.

It was however postulated that alcohol hallucinosis is an independent syndrome that could indirectly precipitate a latent form of schizophrenia. The studies of Benedetti (1952), Scott (1967, 1969) and Cutting (1978) (discussed earlier) also pointed towards a varied outcome. Most of the controversy can however be attributed to the nature of the disorder whose symptomatology overlaps with that of delirium tremens (alcohol withdrawal with delirium) and with schizophrenia. Alcohol induced psychotic disorder has to be distinguished from alcohol withdrawal delirium (Sokya 1988, Gross 1968, Sobczyk 1983), other psychotic disorders such as schizophrenia (Glass 1989, Soyka 1990), psychoses associated with epilepsy (Slater et al, 1963, Roberts et al, 1990, Nicolson et al 2007) and head injuries (David & Prince, 2005).

Benedetti, Victor & Hope and Johansson reported a higher incidence of alcoholism in the families of patients with alcohol hallucinosis than in the general population. Benedetti also found a family history of schizophrenia in relatives of patients with alcohol hallucinosis to be more common than in the general population, but less common than in relatives of patients with schizophrenia.

Alcoholic psychosis was largely more common in monozygotic than dizygotic index twins (Kendler, 1985). He also reported no significant difference in the frequency of schizophrenia or alcoholism in the co-twins of index twins, with or without a diagnosis of alcoholic psychosis.

The patients with schizophrenia more frequently reported a positive family history for schizophrenia compared to patients with alcohol hallucinosis who were significantly more likely to have a positive family history for alcoholism. (Soyka, 1990). More concordance for alcoholism, liver cirrhosis and psychosis due to alcohol use, in monozygotic than in dizygotic twins. (Hrubec & Omenn)

These results support a genetic predisposition for and separate transmission of organ specific vulnerabilities to alcohol damage. Glass (1989) concluded that these studies do not support a genetic predisposition to schizophrenia in patients with alcohol hallucinosis. More likely, these results rather suggest a genetic vulnerability to the psychogenic effect of alcohol in some patients with alcoholism and lend further support to the concept of alcohol-induced psychotic disorder as an independent disorder

. AB et al (1983) noted that socioeconomic variables were not related to the Goodman prevalence of alcoholism. The marital status of both schizophrenics and alcoholics seemed to be equally poor according to Reich J (1985).

Personality and Alcohol induced psychotic disorder:

Mark A. Schuckit (1983) noted in their study that personality attributes were not related to predisposition to alcoholism. He used Eysenck Personality Inventory extroversion neuroticism score in 32 non alcoholic young men with an alcoholic close relative & compared with controls.

Cloninger CR et al (1988) in his study found that high novelty seeking and low harm avoidance were most strongly predictive of early onset alcohol abuse. According to him, these two childhood variables alone distinguished boys who had nearly 20 fold differences in their risk of alcohol abuse.

Robert K. Brooner et al (1993), in their study supported conducting a more comprehensive assessment of axis II diagnosis in drug or alcohol abusers. Martin ED et al (1994) concluded after their study that the five factor model of personality holds promise for studying personality traits in alcohol use disorders. They in their study found that familial risk of alcoholism associated positively with neuroticism and negatively with agreeableness and conscientiousness.

P.Basiaux et al (2001) using Cloninger's Temperament & Character Inventory found early onset alcoholics to be associated with higher novelty seeking in comparison with control subjects, and supported Cloninger's typology. They showed evidence for higher probability of personality disorder in alcohol dependent patients, particularly those with early onset.

Kishore.P et al (1994), Bojir Perme et al (2003), A.K.Vohra et al (2003) and Mahajan.A, Chandigarh & few others had done studies in alcohol dependence with psychotic features.

According to B.Perme et al (2003) the syndrome Alcohol induced psychotic disorder is a heterogeneous disorder as abstinence leads to remission in some people & appeared to be resistant to relapse though they continued to drink. He made out in his study that the age of onset of alcohol use, amount of alcohol use, family history of alcoholism and past history of abstinence did not seem to have any association with incidence of hallucinations on follow up.

The significant finding of his study was that past history of withdrawal hallucinations rendered the patients vulnerable to the development of chronic hallucinosis and he postulated that this may be due to kindling mechanism in brain caused by alcohol.

II. Aim And Objectives

AIM OF THE STUDY

To identify the psychosocial factors and personality traits associated with emergence of psychotic disorder in persons dependent on alcohol

OBJECTIVES OF THE STUDY:

- To study the association between socio-demographic variables and psychosis in Alcohol dependent persons
- To study the association between stressful life events and psychosis in Alcohol dependent persons
- To study the association between Eysenck personality traits and psychosis in Alcohol dependent persons
- To study the association between stressful life events and psychosis in Alcohol dependent person
- To study the association between severity of alcohol dependence and psychosis in Alcohol dependent person
- To study the association between drinking pattern and psychosis in Alcohol dependent person
- To study the association between family history of psychosis and psychosis in Alcohol dependent person

III. Materials And Method

Institutional ethical committee's approval was obtained before conducting the study. The present study was conducted at Government medical college Chennai. This is a tertiary level psychiatric care and teaching institute. The study population has been selected from the inpatients satisfying the selection criteria. Diagnosis was confirmed by two consultants after carefully ruling out other psychotic disorders. Patients closely observed for psychotic features while instituting routine treatment program.

All the instruments were used once the patient was stabilized and became amenable for administering. They were used in a single session. For those suffering from psychotic disorder due to alcohol use, information obtained was verified with a relative, while administering the questionnaires. The instruments were administered mostly within 5 to 10 days; for those suffering from severe psychotic symptoms, it was delayed, but not later than the 15th day. For control group, usually questionnaire & other instruments were administered within 5 days

SAMPLE

30 patients who got admitted during the study period with diagnosis of Alcohol dependence syndrome with psychotic syndrome were selected into study group. 32 patients who got admitted in general and in addiction ward during the study period with diagnosis of Alcohol dependence syndrome without psychotic syndrome were selected into control group.

STUDY DESIGN:

Cross sectional case control study

INCLUSION CRITERIA:

For study group:

1. Age 18 to 60 years
2. Alcohol use in the past one year
3. Alcohol dependence syndrome as per criteria defined by ICD-10
4. Alcohol intake in the past month
5. Emergence of psychotic features during or immediately after alcohol use in clear sensorium.

INSTRUMENTS USED:

1. Proforma for socio demographic data
2. Proforma for eliciting family history of psychosis
3. Severity of Alcohol Dependence Questionnaire
4. Eysenck Personality Questionnaire (EPQ)
5. Presumptive stressful life event scale

Presumptive stressful life events scale was developed by Gurmeet Singh et al. in the year 1984. This scale has 51 items and each item has a mean stress score. A cumulative score can be obtained by summing up the individual scores and weighed depending upon the stress caused to the individual. This scale assesses the events in lifetime or within a short span of time. Score range from 20 to 95

SADD-Q is a short, easy to complete. It contains 20 questionnaire item designed to measure of the severity of withdrawal dependence on alcohol. This includes five subscales with four items in each: Physical, Affective withdrawal relief drinking, Withdrawal relief drinking, Alcohol consumption, and Rapidity of reinstatement. Each item is scored on a 4-point scale, ranging from "Almost never" to "Nearly always" resulting in a corresponding score of 0 to 3. Thus the total maximum score possible is 60 and the minimum is 0.

Scores from 1 to 20 can be considered indicative of mild alcohol dependence .Scores from 21 to 40 can be considered indicative of moderate alcohol dependence Scores of over 40 can be considered indicates severe alcohol dependence

DATA ANALYSIS

Data analysis was done using "SPSS – 16" statistical software by a statistician. Methods used are,

1. Student t test
2. Chi-square test
3. Other statistical methods when ever needed.

IV. Results

30patients were qualified for the study group (pts Alcohol induced psychotic disorder). For some patients, information gathered was verified with a relative who accompanied the patient.

For the control group, (F10.2 Alcohol dependence without complications) all the patients included were closely observed for emergence of any psychotic features during the period of withdrawal (up to 14 days) as it would shift the patient from control group to study group.

Finally, 32 were selected for the control group and the proforma and questionnaires were administered.

		Control	Study	P value
Age	20-30	12	12	0.004
	31-40	16	8	
	41-50	2	16	
	51 -60	2	2	
	Mean(SD)	35.03(7.92)	41.03(8.07)	
Education	Primary	10	8	0.773
	Secondary	20	21	
	College	2	1	
Occupation	Unskilled	13	10	0.615
	Skilled	15	18	
	Clerical	1		
	Business	3	2	
Income	Salaried	7	9	0.421
	Daily wages	17	18	
	Business	7	3	
	others	1		
Marital status	Married	20	26	0.163
	Separated	4	1	
	Divorced	1	0	

	single	7	3	
Religion	Hindu	25	26	0.508
	Muslim	1		
	Christian	6	4	
Family H/O psychosis	No	18	7	0.006
	1 st degree relative	6	17	
	2 nd degree relative	8	6	
Alcohol use in years	Mean(SD)	13.38(7.93)	15.79(6.90)	0.222
SADDQ*	Mean(SD)	32.30(3.131)	41.10(1.583)	0.001
PSLES**	Mean(SD)	69.23(39.07)	192.73(65.88)	0.001
EPQ***	EPQ-E	13.31(3.70)	13.37(2.48)	0.947
Mean(SD)	EPQ-L	14.03(3.23)	13.33(3.07)	0.387
	EPQ-P	6.47(2.26)	7.20(3.10)	0.290
	EPQ-N	12.25(4.35)	16.23(4.88)	0.001

Age

Most of the patients in control group (87.5%) fell within the age group of 20 to 40 years whereas more than half of the study group fell in the age group of 41 to 50. This difference between the two groups was statistically significant. The difference found between the mean ages of both groups was also statistically significant.

According to table 3, subjects who had studied up to 5th std were 10 and 8 for the control and study groups respectively. One uneducated person was found in both groups.

Education

Those who had education more than 5th std and up to higher secondary were 20 and 21 respectively for control and study groups. Only very few had passed out of 10th std among them. Only 2 among the control group and one among the study group had reached college education. No significant differences between the two groups were made out in statistical analysis.

Occupation

Most of them belong to either skilled or unskilled manual work. No significant difference between the 2 groups was noticed.

More than half of subjects in each group were working on daily wages basis. Significant number of subjects were salaried or into business. Very few were earning through other means like earning from properties or bank savings. No Statistically significant differences were made out between the groups.

Marital Status

The number of patients belonging to married and living together was higher in the study group (74.2%) than the control group (62.5%). Patients without spouse were higher in control group (37.5%) while it was less in the study group (25.8%). The observed differences were statistically not significant. Among the Study population 77.4% were belongs to nuclear family type. The family to which the patients belonged was not statistically different between control and study groups.

Religion

Among the 62 samples 51 patients were following Hinduism, 1 patient was following Islam, 10 patients were following Christianity Religion wise split up is given in table 7 and the differences between the two groups were minimal and statistically not significant.

From table 9 it is understood that there is significant difference between cases and controls regarding the level of dependence. Majority of the cases had higher degree of dependence.

Table 10 gives details on the number of patients who had relatives with history suggestive of psychotic disorder, according to the proforma given in the annexure.

In case of the study group, about 77% of them had either a first degree or a second degree relative suffering from psychiatric illness where as in the control group 43% had relatives with psychiatric illness.

If we look more closely, 57% patients in the study group had first degree relatives manifesting psychiatric symptoms where as it was just 18% in the control group.

6 among the control group and 17 among the study group had a first degree relative with history suggestive of psychosis whereas 8 among the control group and 6 among the study group had a second degree relative with history suggestive of psychosis. The differences found between the two groups were statistically significant, using chi-square test.

In table 11 the mean Eysenck's Personality Questionnaire score in each domain (Extrovert, Lie score, Psychoticism and Neuroticism) is given for both control and study group

Eysenck Personality Traits

Both groups were found to be more or less similar in all domains except neuroticism, in which the study group scored higher than the control group and the difference was significant using the student – t test.

The mean duration of alcohol use of the two groups are compared in table 13 using t - test and other parametric tests (as S D was found to be more than 50%). No significant difference was made out by either method.

In the alcohol induced psychosis group (n=30) 60% of the patients had suicidal ideation But in control group 7% of the patients only had Suicidal ideation. The difference between both group was statistically significant.

In table 13 describes the difference between suicidal attempts among the two groups. Suicidal attempts was done by 30% of patients with alcohol induced psychosis. Whereas in patients without It was found to be highly significant statistically.

In tables 28, significant correlation was made out between Alcohol dependence and Psychoticism and Neuroticism traits of Eysenck's personality; whereas, high lie score correlated with psychotic disorder due to alcohol use.

There was significant statistical difference in total mean score of stressful life events scale among the cases (192.73) and controls (69.23). Stressful life events were associated more with study group than control group. Most commonly reported stressful events are family conflict, financial loss, marital conflict and unfulfilled commitments

V. Discussion

In this study control group persons were mostly within the 20 – 40 years of age whereas study group persons were falling in the range of 40 – 50 years; this difference was statistically significant ($p < 0.05$). The mean age of the control group was 35 years and the mean age of the study group was 41 years. When mean age of the two groups were compared, the difference was found to be statistically significant. This finding is contradictory to the finding of Marc A. Schuckit, M.D. (1982) in which mean age of alcohol dependents with history of psychosis was lesser than that of those without psychosis.

When mean duration of alcohol use was compared, the difference between the two groups was not significant ($p > 0.05$). This finding is in accordance with the hypothesis V.

We reasonably infer that alcohol dependents with psychotic features start taking alcohol late and consume alcohol for nearly the same length of period as compared with control group. This finding is contrary to Tsuang et al (1994) and M.A. Schuckit and G. Winokur (1971), who say younger onset of alcohol use, is associated with alcoholic hallucinosis.

These findings (significant difference in mean age and no statistically significant difference in mean duration of alcohol use) disagrees with Indian study by Bojir Perme et al (2003) which found no association between age of onset of alcohol use and alcoholic hallucinations.

In this study (tables 2-7), socioeconomic variables were not significantly different between the two groups. One surprising finding is that the marital status of the control group was poorer compared to the study group (table 5) though the difference is not statistically significant ($p > 0.05$). This finding is against the finding of M.A. Schuckit (1982) which noted significant difference between the alcohol dependents with history of psychosis and those without psychosis, in marital status. Tsuang et al (1994) found significant marital problems in persons with alcoholic hallucinosis compared to alcoholic dependents; This is not found in the present study

The difference with the control group was statistically significant ($p < 0.05$). Total severity was also found to be significantly high in the study group ($p < 0.001$). All these indicate that a high degree of alcohol dependence may predispose an individual to develop psychotic features.

These findings are in line with Tsuang et al (1994), who found in his study that alcohol dependents with psychotic features use more alcohol per occasion and face more alcohol related life problems. He pointed out in his study that medical problems were significantly high among the alcoholic patients with hallucinosis which is also an important finding in the present study. Flavia Barros da Silva Lima et al (2005) using the alcohol dependence data scale in their study for assessment, have pointed out that, persons with severe alcohol dependence scored high in psychiatric symptoms when compared to those with mild to moderate dependence.

Schuckit.M.A and George Winokur (1971), who compared patients with history of alcoholic hallucinosis with those lacking such history, found out hallucinosis patients were characterized by longer duration of alcohol use and multiple previous alcoholic admissions. These finding were also confirmed by the present study.

An Indian study by Bojir Perme et al (2003), found that lack of association between severity of alcohol use and alcoholic hallucinosis, which is against the findings of this study.

Carol L. M. Caton (2005) et al in their prospective study found that persons with substance induced psychosis have antisocial personality disorder, frequent homelessness, and poor family support, which in turn increase the stressor. Some of the findings in the present study are in confirmation with the above study.

This study presented some limitations because of its study design. We could only verify the association between severity of dependence and psychotic symptoms, but we could not establish a causal or sequential factor for this association.

In this study, about 57% of alcohol dependent persons with psychotic features were found to have one or more first degree relatives with history suggestive of psychosis (table 11). The difference with the control group was statistically significant ($p < 0.01$). This finding rejects the hypothesis II (page 18). This means that there may be some genetic predisposition for development of psychotic features.

Whereas Tsuang et al. (1994) in their study was not able to make out any significant difference on family history of schizophrenia between alcoholic hallucinosis and alcohol dependence without hallucinations.

The study done in India by Bojir Perme et al. (2003) found no significant difference in family history of psychotic illness among the two groups, one comprising of alcohol dependence with history of hallucinosis and the other without hallucinosis. This finding is against the outcome of the present study.

Even though significant difference was made out among first degree relatives, the important issue that has to be kept in mind is that the proforma used to elicit family history is yet to be validated and it may probably be sensitive to minor emotional disturbances or may be less specific.

After considering all these points, we can safely say that some family psychopathology may predispose the individual for development of psychiatric features once they become established alcohol dependents.

In this study, patients with a family history suggestive of psychiatric features show more severe alcohol dependence. Which could have been due to genetic risk, disturbed early developmental period produced more stressor to the persons.

We found significant differences between personality aspects of study and control groups in this study. Alcohol dependents with psychotic features had significantly more of neurotic traits compared to alcohol dependents without psychotic features ($p < 0.05$). This rejects the hypothesis III. When individual traits were correlated with the respective condition, psychotism and neuroticism correlated with alcohol dependence where as lie score correlated with psychotic disorder due to alcohol use. This finding is as suggested by G.Scott Acton (2002), according to whom impulsivity measured by the psychotism part of EPQ is more associated with substance use. But with the development of psychotic feature lie score is correlated with the condition.

Another important finding of this study was that patients of the study group had significantly higher incidence of suicidal ideations and attempts compared to control group ($p < 0.01$), which is contrary to the findings of Tsuang et al. (1994).

In the present study number of drinks per typical day (quantity of alcohol) and frequency of first drink in morning was found to be significantly higher in psychotic disorder due to alcohol use than alcohol dependence without complications. So the hypothesis IV is rejected.

This finding is in line with M.A.Schukit (1982) who agrees that higher quantity of alcohol consumption is associated with psychotic features. But Bojir Perme et al (2003) was not able to find any significant association between quantity of alcohol use and psychotic disorder due to alcohol use.

In a landmark review - Psychiatric enigma 1 & 2, B. Glass (1989) after thoroughly analyzing the previous research work in literature outlined few questions for future direction. This present study is able to address one of those questions related to severity of dependence.

The findings of the study are clinically more relevant as early treatment could prevent severe dependence and its associated complications like development of psychotic features, medical and legal problems or any attempt for suicide.

Stressful life events were more associated with Alcohol induced psychosis. Most of the stressors are family conflict, financial loss, marital conflict and unfulfilled commitments. This may be due to the chronic alcohol intake produced financial burden to the family, psychotic symptom produced conflict in the family. A community based prospective study would probably throw better light on the conclusions of this study.

VI. Summary & Conclusions

- Persons with severe alcohol dependence are at risk of developing psychotic features.
- Family history of psychosis predisposes alcohol dependent patients for development of psychotic features.
- Persons with alcohol dependence, having neurotic traits as measured by Eysenck Personality Questionnaire, are more prone for development of psychotic features.
- Persons with alcohol dependence are at increasing risk of developing psychotic disorder as the age progress.
- Suicidal ideations and attempts are common in Alcohol induced psychotic disorder compared to alcohol dependence syndrome.
- Duration of alcohol use is not associated with development of psychotic features.

LIMITATIONS

1. Samples for the study, having been taken from a hospital based population, may represent the more severely alcohol dependent patients. No females were included in data analysis to avoid confounding effect. All these lead to difficulty in generalizing the results of the study to the general population.
2. The study design, being a cross-sectional one, the validity of the diagnosis could not be confirmed in difficult cases which needs continuous follow up over a period of time (at least 6 months).
3. As the investigator was not blind to the diagnosis, while administering the questionnaire and proforma, the chances of observer bias creeping into assessment has to be considered.
4. SADD-Q is based upon the answers given by the patients depending on his need for treatment, where a chance of subjective bias colouring the picture is high.
5. No biological tools were used in the study to measure the effect of alcohol over the brain or body which may reduce the objectivity of assessment.
6. The family history proforma used in the study is yet to be validated.

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