

## RESEARCH

# The role of personality correlates in the pathogenesis of alcoholism: an intergenerational study among alcohol dependent and nondependent population

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## Abstract

**Background:** ‘Children of alcoholics (COAs)’ is a general term used to describe children or individuals with one or more parents with alcoholism. In Assam, there is no study done so far on COAs, and on parents of alcohol dependence, though the prevalence rate of alcohol is reported to be high.

**Material and methods:** Objectives were to examine the personality variables of the alcohol dependent fathers (ADF) and their sons (SADF), as well as the alcohol nondependent fathers (NADF) and their sons (SNADF). Tools administered were informed consent form, socio-demographic proforma, the Michigan Alcohol Screening Test (MAST), Kuppaswamy socio-economic scale (KPSS), checklist of various common ailments, and Eyesenck’s Personality Inventory (EPI). Data obtained was analysed using descriptive statistics such as mean, standard deviations and frequencies. Non-parametric test such as the chi-square test and parametric tests such as student’s ‘t’ test and analysis of variance (ANOVA) were carried out.

**Results:** There was no significant difference between the groups on the variables of age, education, occupation, family type, number of children, and socioeconomic status. There was an upward trend noted in alcohol use among SADF. Prevalence of illness was more among ADF. ADF were found to be high on neuroticism and extraversion, in comparison to NADF. SADF were higher on extraversion in comparison to SNADF, but there was no significant difference found in neuroticism in both the groups.

**Conclusion:** Clinicians must have a thorough knowledge of the impact of addiction upon the development of emotional ties when working with either COAs or adult COAs.

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## Introduction

Alcohol affects each member of the family from the unborn child to the alcohol user’s spouse. Its far reaching affects result in not only physical problems for the alcohol users, but also may result in physical and psychological problems for other members of the family. Alcohol addiction is defined as a behaviour, over which an individual has impaired control with various harmful consequences and negative implications.[1,2] Alcohol use and abuse are health hazards, and the problems of addiction are not limited to individuals in certain social strata, but appear to affect people in all levels of the society. Murthy *et al.*[3] have rightly remarked that “Substance use patterns are notorious for their ability to change over time”. Jellinek[4] offered the following definition for alcohol problems: “Alcohol addiction is an uncontrollable craving for alcohol (i.e. physical dependence)”, while chronic alcoholism is

referred to “the mental or physiological changes associated with prolonged use of alcohol”.

In psychiatry and psychological studies and treatment, the International Classification of Diseases, 10th revision (ICD-10), published in 1992, is used as it is the definitive international system of diagnosis, classification, and coding of diseases and related health problems. It is used worldwide to classify and record diagnoses in clinical practice and in hospital settings to capture disease occurrence for statistical monitoring. The ICD defines “alcohol abuse as repeated use despite recurrent adverse consequences; further defining alcohol dependence as alcohol abuse combined with tolerance, withdrawal, and an uncontrollable drive to drink”.[5]

In our country, both licit and illicit substance use cause serious public health concerns. National level prevalence has been calculated for many substances, but in the studies and surveys regional variations are quite evident. In the

national prevalence studies, alcohol use/abuse prevalence in different regions is found to be varied from 167/1000 to 370/1000. Alcohol addiction for chronic alcoholism ranges from 2.36/1000 to 34.5/1000. In a meta analysis by Reddy and Chandrashekar,[6] it is seen that in India, an overall substance use prevalence is 6.9/1000. Urban and rural rates vary, and it is found to be 5.8 and 7.3/1000 population. The rates of men and women were found to be different, i.e. 11.9% and 1.7% respectively. Among women, alcohol consumption is reported to be less in comparison to men in India, though alcohol use among women is found to be increasing as seen in epidemiological research. Various regional studies between 2001 and 2007 continue to reflect this variability. A study conducted in southern India by John *et al.*[7] showed that 14.2% of the population surveyed had hazardous alcohol use on the Alcohol Use Disorders Identification Test (AUDIT). Again a similar study by Sampath *et al.*[8] in the tertiary hospital showed that 17.6% admitted patients in the hospital settings had hazardous alcohol use.

A study on alcohol use from Delhi by Mohan *et al.*[9] found that annual incidence of nondependent alcohol use and dependent alcohol use among men was three and two per thousand persons in a total cohort of 2937 households. Among the national level studies, the national household survey of drug use in the country by Ray[10] is the first systematic effort to document the nationwide prevalence of drug use. In his study, it was found that alcohol (21.4%) was the primary substance used apart from tobacco, followed by cannabis (three per cent) and opioids (0.7%). In the findings, 17 to 26% of alcohol users qualified for ICD-10 diagnosis of dependence, translating to an average prevalence of about four per cent. In a study by Murthy *et al.*,[3] a marked variation in alcohol use prevalence was found in different states of India; current use ranged from a low of seven per cent in Gujarat (officially under prohibition act) to 75% in Arunachal Pradesh which is situated in the north-east part of India.

In a retrospective study of emergency treatment in Sikkim between 2000 and 2005 by Bhalla *et al.*,[11] substance use emergencies constituted 1.16% of total psychiatric emergencies. The commonest cause of emergency was alcohol withdrawal which was reported to be 57.4% among group of patients in the inpatient setting. In Assam, in a study reported by Hazarika *et al.*,[12] alcohol users were 37% in rural Assam and a prevalence rate of 365/1000 population, which was greater than the national prevalence. Bhagabati and his colleagues'[13] research study, conducted in Assam during 2009, depicted that alcohol use among below 18 years is 22.2%, and the earliest use is 11 years. The intake of alcohol in Assam is higher than the national prevalence, and children as well as adolescent population is found to be using and abusing

alcohol, which is a serious public health issue.[13] In Assam, there is no study done so far on children of alcoholics (COAs), and on parents of alcohol dependence, though the prevalence rate of alcohol is reported to be high.

'COAs' is a general term used to describe children or individuals with one or more alcoholic parents. Although the ramifications of living in a family with addicted, alcohol using parent are variable, nearly all children from alcohol user's families are at risk for behavioural and emotional difficulties, and live with physical and psychological scars as a result of parental alcoholism.[14] From prenatal influences leading to learning and memory problems to vulnerabilities in behavioural and emotional control and aggression in adulthood,[15,16] a significant number of COAs exhibit physical, psychological and/or interpersonal difficulties.[17] Parental alcoholism could also instill a legacy which affects the development of both individual and family members, and the habitual patterns are often carried forward from one generation to the next. Sons of alcohol using fathers are at fourfold risk compared with the men offspring of non-alcohol using fathers, as reported by Goodwin.[18] Though there are strong genetic causes for alcoholism in COAs as reported by the genetic studies, not all COAs become alcohol users. Hence, environmental and family studies gained importance in the early part of the 20th century which still continues.

From early 1970's, research work on alcoholism had undergone a massive transition from only genetic studies to interactional/family studies, and from COAs to women with alcohol use and abuse. Of late there has been an increasing focus on COAs seeking to understand the adverse impact of parental alcoholism on their personality growth and psychosocial functioning. The effects of parental alcoholism can vary with a child's developmental stage.[19,20] Hence, in studies from early childhood till late adulthood, there has been variety of dysfunctions noted among COAs, that could have a deep impact upon their psyche and well-being. The most common explanation for the adverse effects of parental alcoholism has been characterised by the general environmental mechanism.[21-23] According to this explanation, parental alcoholism is believed to produce disturbed family relationships and dynamics that has a deep negative impact on the personality and psychosocial well-being of children who grow up in such environments.

'Personality' typically refers to characteristic ways of thinking, feeling and behaving or acting out, that show some consistency when measured across situations and over time. Personality is defined by Allport[24] as "dynamic organisation within the individual of those psychophysical systems that determines his unique adjustment to his environment". The belief that personality plays a role in alcoholism, and it may even be one of the major causes has

a long tradition. Among studies in alcoholism, role of personality is one of the most common with respect to alcohol use. There have been a lot of discussions linking personality traits and addictive behaviours, which are commonplace in the psycho-social literature. Sleisinger[25] commented that “by definition a personality disorder underlies the habitual use of alcohol”.

Some research findings are also suggestive of an interaction between a personality trait called “novelty seeking” and parental alcoholism, which increase the risk of, or protect against, developing individual alcoholism. High novelty seeking is a strong risk factor for alcoholism among COAs. Low novelty seeking appears to protect against the risk of developing alcoholism among the same.[26] Some factors have been identified as “disinhibitory personality traits”, which refers to risk-taking, extraversion and exploratory, thrill-seeking and sometimes impulsive personality characteristics. Some studies have also reported that children, especially boys, who exhibit these characteristics have a high likelihood of becoming alcohol user as adults.[26]

The most pressing research problem in this area has centred around the difficulty (often, the impossibility) of separating personality factors as well as behaviours that are consequences of alcoholism or drug abuse from those that are integral to or coincident with abuse. Majority of studies confirm the role of personality factors for alcoholism and maintenance of the problem of addiction among vulnerable population and children of COAs, while some investigators have moved beyond the simple comparison of families with and without alcoholic member, their genetic transmission and personality factors, and have chosen to assess the impact of the alcohol user’s family’s home environment and interaction style with the children. The COAs have been characterised as an at-risk population because of the dysfunctional family environments that disrupt their psychosocial growth and development due to their exposure to parental alcoholism.

## Methodology

### Objectives

1. To examine the personality variables of the alcohol dependent fathers (ADF) and their sons.
2. To examine the

personality variables of the alcohol nondependent fathers (NADF) and their sons.

### Hypotheses

1. Fathers with alcohol dependent syndrome (ADS) will not differ from fathers with nondependent use of alcohol on extraversion.
2. Fathers with ADS will be higher on neuroticism than fathers with nondependent use of alcohol.
3. Sons of alcohol dependent fathers (SADF) will not differ on extraversion from sons of fathers with nondependent use of alcohol (SNADF).
4. SADF will be higher on neuroticism than SNADF.

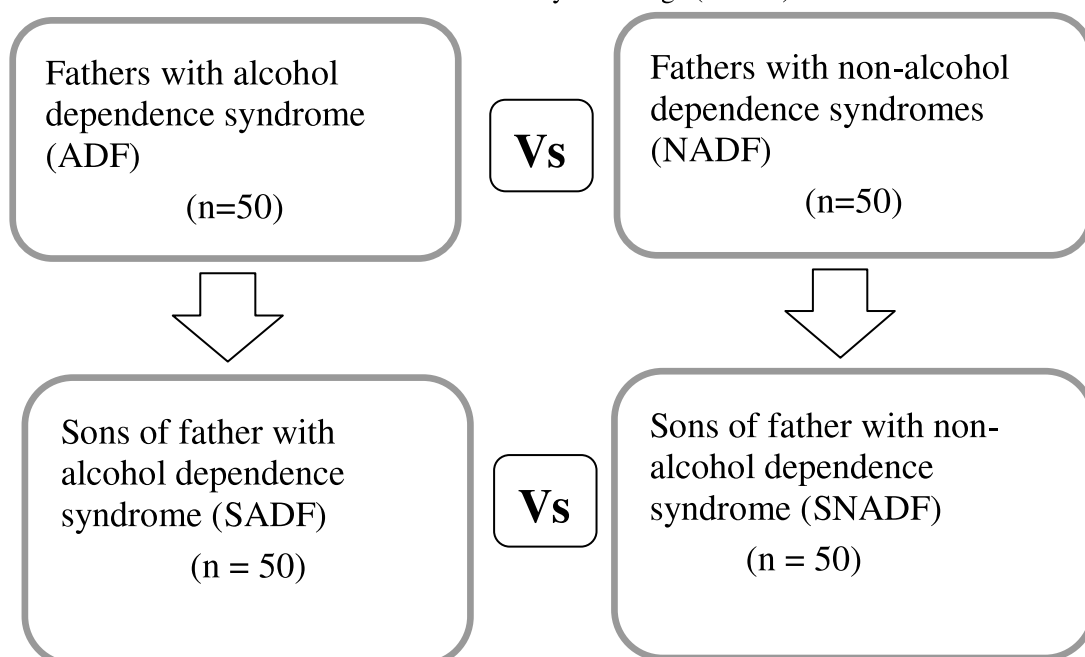
### Sample

The present study was a case-control study with four groups of subjects comprising ADF, NADF, SADF, and SNADF. The four groups were the following:

1. Fifty numbers of non-tribal individuals/fathers with ADS and their sons of more than 15 years of age (N = 50).

Research throws light that the patterns of alcohol consumption and the reactivity of the family to alcohol use in family members would differ from one ethnic group to another, and will not be the same. It is seen that in Assam, the tribals consider drinking alcohol as a norm and a part of their traditions and customs whereas in the plain areas, alcohol use is considered to be a health hazard. Hence, the view toward alcoholism differs for which tribal population was excluded in our sample.

2. Fifty number of non-tribal individuals/fathers with non-alcohol dependence syndrome (NADS) and their sons of more than 15 years of age (N = 50).



Total sample size: 200 subjects.

## **Inclusion criteria**

### **Group I: ADF**

Indoor patients of Gauhati Medical College Hospital (GMCH) diagnosed as ADS by ICD-10 criteria; patients with ADS from other hospitals and de-addiction centres, following the same treatment regimen for alcoholics.

Age: 40-60 years.

Ethnicity: Non-tribal.

Sex: Men.

Socioeconomic status (SES): Middle class.

Education: Minimum qualification of Xth standard.

The Michigan Alcohol Screening Test (MAST) score of > 13.

### **Group I A: SADF**

Age: 15 years and above.

SES: Middle class.

Education: Minimum qualification of Xth standard.

### **Group II: NADF**

Individuals with nondependent use of alcohol were recruited using the snow-ball technique.

Age: 40-60 years.

Ethnicity: Non-tribal.

Sex: Men.

SES: Middle class.

Education: Minimum qualification of Xth standard.

Score of < 13 in MAST scale.

### **Group II A: SNADF**

Age: 15 years and above.

SES: Middle class.

Education: Minimum qualification of Xth standard.

## **Exclusion criteria**

History of psychotic disorders, major depressive disorder, bipolar affective disorder, treatment for any psychiatric disorder in the past, epilepsy or past history of generalised tonic-clonic seizures (excluding withdrawal seizures), organic brain disorder or dysfunctions, any chronic debilitating physical illness, mental retardation, past and present history of other drug use and multiple substance abuse/dependence.

## **Tools administered**

Informed consent form, socio-demographic proforma, MAST, Kuppaswamy socio-economic scale (KPSS), checklist of various common ailments, Eyesenck's Personality Inventory (EPI).

## **Description of the tools**

**MAST:** MAST was developed by Selzer,[27] and it is one of the oldest and most accurate alcohol screening tests

available to identify dependent drinkers with up to 98 per cent accuracy. There have been several variations of the MAST that includes the brief MAST, the short MAST, as well as the self-administered MAST. The MAST is a 22-question self-administered test and is a revised version which helps one to be aware of use or abuse of alcohol. The questions relate to the patient's self-appraisal of social, vocational, and family problems frequently associated with heavy drinking. It assesses symptoms and consequences of alcohol abuse, such as guilt about drinking; blackouts; delirium tremens; loss of control; family, social, employment, and legal problems following drinking bouts; and help-seeking behaviours, such as attending Alcoholics Anonymous meetings or entering a hospital because of drinking. This test specifically focuses on use and abuse of alcohol, and not on the use of other drugs. It has been productively used in a variety of settings with varied populations. The MAST, when compared with other diagnostic criteria of alcohol problems, gave validity measures with the following span: predictive positive value (PVpos) 0.24–0.96, predictive negative value (PVneg) 0.78–1, sensitivity 0.36–1, and specificity 0.36–0.96.[28] The studies indicate that the long version of the MAST possesses good internal-consistency reliability, as indicated by Cronbach's alpha coefficients of .83 to .93.[29]

In our study, to avoid chances and over-inclusion, we applied MAST to patients already diagnosed as alcohol dependent in the clinic settings. Selzer[27] scores seven for alcohol abuse, and in many studies more than 13 for dependency in alcohol was reported. Ross *et al.*[30] compared scores on the MAST to diagnoses of alcoholism obtained from the National Institute of Mental Health Diagnostic Interview Schedule (NIMH-DIS).[31] In the study, the MAST cut-off score for ADS that yielded the highest overall accuracy was 13 or greater. Hence, in our study we kept 13 as the cut-off for ADS group.

**KPSS**[32]: KPSS is a simple instrument to measure SES of a person. Education, occupation and income were selected as three variables which are found to contribute to SES of a person. KPSS has been in use as an important aid to measure SES of families in urban communities. The original 1976 version has been updated by Mishra and Singh[33] and Kumar *et al.*[34] Mishra and Singh[33] have pointed out that due to inflation, the economic criteria in a scale lose their relevance over time. For this reason, they had proposed a revision of the original scale. The scale was last revised in 2007 to bring income classification up to date and published in public domain in 2007. This latest update may be applicable in the studies ongoing in 2012, which is done using latest consumer price index numbers for industrial workers, CPI(IW), for January, 2012.[35] Each variable was scaled from one to 12 points providing equal weightage to the different variables. Total number of items is 21. The scale has



ranges from three to 29. The social classes were divided into the following groups:

Upper	26-29
Middle	16-25
Lower middle	11-15
Upper lower	5-10
Lower	< 4

KPSS update of income range follows as:

Score	2012
12	= 30375
10	15188-30374
6	11362-15187
4	7594-11361
3	4556-7593
2	1521-4555
1	= 1520

Validity of the scale was matched against outside criterion, and it was found to be satisfactory. In distribution pattern also, it was found to give very satisfactory results. When all the three variables were included, the multiple biserial reliability was found to be .885 which is quite significant.

One moderator of parental alcoholism, which is found to influence the well-being of the child and conflicts in family atmosphere is socioeconomic stress and adversity. Economic difficulty is associated with alcoholism[36,37] and in turn, alcoholism frequently results in downward occupational drift leading to dysfunctional family atmosphere.[36] Studies related to SES and alcoholism indicates mixed results. Hence, we had administered this scale and had proposed to take only middle SES in order to control the sampling bias, and to reduce the influence of SES to alcoholism and family dysfunction.

**EPI:**[38] EPI measures neuroticism and extraversion, and consists of two parallel forms - A and B - thus making retesting possible without the interference of memory factors. A lie score is also incorporated to assess the possible role of “desirability response set”. EPI form A was administered in the present study. The scale consists of 57 items. The two personality dimensions, extraversion and neuroticism, were described in the 1947 book *Dimensions of*

*Personality*. [39] It is extensively used in psychosomatic research. It is extensively used to measure neuroticism and extraversion in preference to other personality questionnaire by virtue of its brevity, its high reliability, and negligible correlation with variables such as age and sex. It is highly correlated to the M-R score of the Cornell Medical Index. Many of the claims of Eysenck regarding the various aspects of EPI have been confirmed in Indian population, after the scale was standardised in Indian population by Abraham *et al.* [40] and presented in the Annual Conference of the Indian Psychiatric Society in 1976. The cut-off scores are for extraversion - mean 11.3 ( $\pm$ ) 3.5, neuroticism - mean 11.6 ( $\pm$ ) 4.6, and lie score - 4. This scale is widely used in India since the last decade due to high reliability and validity in Indian population.

### *Design of the study*

The study involved two phases: pilot study and the main study. In the pilot study, the translations of the selected scales in vernacular language were carried out. Three mental health professionals did the translation of the scales. They did the translations independently, and then met to discuss each item of the translated questionnaire. And then two other psychiatrists did the back translation into English language. These scales were administered on two ADF and their sons, and two NADF and their sons. The investigator got familiarised with the tools, and it took nearly two hours for the administration of the tools.

In the main study, inpatients of the tertiary care teaching hospital and other alcohol detoxification centres were considered. In the general population, MAST was administered, and the individuals who met the criteria for alcoholism in the MAST score were excluded from the study. Those who were included for the study were screened with a clinical checklist interview for associated physical and mental illnesses. From the tertiary care teaching hospital, the patients taking part had to undergo the unit's standard regimen in order to keep the withdrawal process under control. Patients were requested to stop all consumption of alcoholic beverages and non-prescribed drugs from their first hospital day.

At the end of the second week of abstinence, they were screened using the semi-structured interview for present or previous alcohol dependence, significant somatic or psychiatric disorder at the time of the study, significant psychiatric disorder in the past, and antecedents of affective or psychotic disorders and other psychiatric comorbidity. Benzodiazepines are used to control the withdrawal symptoms during the first seven to ten days, and they might affect cognitive functions. The washout period of long acting benzodiazepine is seven days, and persons may have features of Wernicke's encephalopathy, which may cause cognitive disturbance. This would affect the findings in the

assessment as they would be confounding factors in the study population; so, only after two weeks, the assessments were done. Because all addicts in the present study were of more than two weeks abstinent at the time of testing, the observed group differences are not attributable to residual drug effects or withdrawal effects.

MAST was administered as a screening tool. Socio-demographic profoma with KPSS were asked to be filled in, and the checklist for major physical illnesses was administered, followed by EPI scale. Their sons, as per the inclusion criteria, were administered the same scales following the same procedure as mentioned above. For the second group recruited from the general population, scales were administered in the above mentioned ways, after they fulfilled all the inclusion and exclusion criteria required for the study.

#### **Ethical considerations**

Written informed consent was obtained from the study population. The group from the hospital and institution were continuing their standard treatment regimen. Necessary precautions were taken, so that participation in the study by them didn't affect their treatment process. Participation was purely on voluntary basis, and they were informed that there would be no direct or indirect benefits for participating in the study. Confidentiality and anonymity was assured. The participants could withdraw from the study at any point of time. They were assured of the researcher's availability if any assistance was required from the researcher.

#### **Results**

Data obtained was analysed using descriptive statistics such as mean, standard deviations and frequencies. Non-parametric test such as the chi-square test and parametric tests such as student's 't' test and analysis of variance (ANOVA) were carried out to determine the variables on which the groups differed significantly as well as to examine the associations between the variables.

#### **Socio-demographic characteristics of the sample and clinical data**

Table 1 shows that there was no significant difference between the groups on the variables of age, education, occupation, family type, number of children and SES, because the "p" value is more than 0.05 level.

**Table 1. Chi-square test for testing the association between alcohol dependent fathers (ADF) and alcohol nondependent fathers (NADF) on the socio-demographic variables**

Socio-demographic variables		ADF	NADF	Total	$\chi^2$ value	“p” value
Age groups	40-50	25	25	50	.00	1.000
	50-60	25	25	50		
	Total	50	50	100		
Education	Up to graduate	43	42	85	.078	.779
	Post graduate	7	8	15		
	Total	50	50	100		
Occupation	Unemployed	2	4	6	4.991	.417
	Self-employed	9	13	22		
	Public sector	20	19	39		
	Private sector	9	9	18		
	Professional	10	4	14		
	Retired and others	0	1	1		
	Total	50	50	100		
Family type	Joint	22	18	40	1.239	.538
	Nuclear	24	25	49		
	Extended	4	7	11		
	Total	50	50	100		
Number of children	1 child	12	9	21	.576	.750
	2-4	29	32	61		
	5-6	9	9	18		
	Total	50	50	100		
Socio-economic status	Lower middle class	43	38	81	1.624	.202
	Upper middle class	7	12	19		
	Total	50	50	100		
Significance level is at $p < 0.05$						

**Table 2. Chi-square test for testing the association between sons of alcohol dependent fathers (SADF) and sons of alcohol nondependent fathers (SNADF) on the socio-demographic variables**

Socio-demographic variables		SADF	SNADF	Total	$\chi^2$ value	"p" value
Age groups	15-20	28	36	64	4.059	.255
	21-25	20	14	34		
	26-39	1	0	1		
	40 and above	1	0	1		
	Total	50	50	100		
Education	Higher Secondary	13	15	28	.645	.724
	Graduate	27	23	50		
	Post graduate	10	12	22		
	Total	50	50	100		
Occupation	Student	32	39	71	7.262	.202
	Unemployed	5	2	7		
	Self-employed	9	3	12		
	Public sector	1	1	2		
	Private sector	2	5	7		
	Professional	1	0	1		
	Total	50	50	100		

Significance level is at  $p < 0.05$

Table 2 shows that there was no significant difference between the groups on the variables of age, education, occupation, family type, number of children and SES because the p value is more than 0.05 level.

There was no significant difference between SADF and SNADF in their use of alcohol as the p value is more than 0.05 level. Though there was no significant difference found in the variables, there was an upward trend noted in alcohol use among SADF (Table 3).

Table 4 examines the ADF and NADF in terms of prevailing illness. Although the table doesn't present any specific trend either in respect of ADF or NADF, yet certain characteristics are prominent, e.g. prevalence of

illness was more among ADF (56.1% ) than NADF (43.9%); most of the hypertensive patients (69.2%) belonged to the ADF group, while it was less than half (30.8%) in respect of NADF group. The proportion of diabetic patients was more among ADF. Similarly, majority of the hypertension and diabetes patients came from ADF sample. The latest characteristics are in conformity with the expected results. However, there were only three cardiovascular patients, and interestingly all are from NADF. This may be due to sample size or it could be that there is no association between alcohol consumption and cardiovascular diseases.

***Descriptive data and comparison of personality correlates in alcohol dependent fathers (ADF), alcohol nondependent fathers (NADF), sons of alcohol dependent fathers (SADF), and sons of alcohol nondependent fathers (SNADF)***

Table 5 shows that both the groups differ significantly in their personality correlates. Comparison done by 't' tests indicates significant difference in extraversion and neuroticism between both ADF and NADF. ADF were found to be high on neuroticism and extraversion, in comparison to NADF at  $< 0.01$  level.

Table 6 shows significant difference on extraversion between SADF and SNADF, but there was no significant difference found in neuroticism in both the groups. SADF were higher on extraversion in comparison to SNADF.

Since the calculated value of F (i.e. 7.832)

**Table 3. Chi-square test for testing the association between sons of alcohol dependent fathers (SADF) and sons of alcohol nondependent fathers (SNADF) with regard to alcohol use and abuse**

Sons	Fathers		Total	$\chi^2$ value	p value
	ADF	NADF			
No alcohol use	43	46	89	.919	0.338
Alcohol use	7	4	11		
Total	50	50	100		

Significance level is at  $p < 0.05$

**Table 4. Distribution of physical illnesses among alcohol dependent fathers (ADF) and alcohol nondependent fathers (NADF) groups**

Physical illness	ADF n (%)	NADF n (%)	Total n (%)
No illness	25 (43.9)	32 (56.1)	57 (100)
Hypertension	9 (69.2)	4 (30.8)	13 (100)
Diabetes	7 (53.8)	6 (46.2)	13 (100)
Cardiovascular Illness	0	3 (100)	3 (100)
Any other chronic physical illness	0	1 (100)	1 (100)
Hypertension and diabetes	7 (63.6)	4 (36.4)	11 (100)
Hypertension and any other chronic physical illness	1 (100)	0	1 (100)
Diabetes and cardiovascular Illness	1 (100)	0	1 (100)
Total	50 (50)	50 (50)	100 (100)

is greater than tabulated value of F (i.e. 2.63) at (3,196) df for 5 level of significance, hence the test is significant (Table 8). We may conclude that there is a significant difference between the mean effect of extraversion on ADF, NADF, SADF, and SNADF.

**Table 5. Comparison of personality correlates among alcohol dependent fathers (ADF) and alcohol nondependent fathers (NADF) using 't' test**

	Fathers (n)	Mean	Std deviation	Std error mean	t-value	df	Sig (2-tailed)
Extraversion	ADF (50)	11.28	3.051	.431	2.901	98	.005*
	NADF (50)	9.46	3.221	.456			
Neuroticism	ADF (50)	14.72	4.408	.623	7.712	98	.000*
	NADF (50)	8.38	3.790	.536			

**Table 6. Comparison of personality correlates among sons of alcohol dependent fathers (SADF) and sons of alcohol nondependent fathers (SNADF) using 't' test**

Extraversion	SADF (50)	12.78	3.851	.545	3.044	98	.003*
	SNADF (50)	10.36	4.095	.579			
Neuroticism	SADF (50)	11.24	3.900	.551	-.034	98	.973
	SNADF (50)	11.30	11.697	1.654			

Significant level is at \*p < .01 level

In Tukey's HSD post hoc test, there is significant difference found between ADF and NADF as well as SADF and SNADF in measures of extraversion, wherein ADF and NADF were found to be high in extraversion dimension (Table 9).

Since the calculated value of F (i.e. 7.239) is greater than tabulated value of F (i.e. 2.63) at (3,196) df for 5 level of significance, hence the test is significant (Table 10). We may conclude that there is a significant difference between the mean effect of neuroticism on ADF, NADF, SADF, and SNADF.

In Tukey's HSD post hoc analysis, there is no difference found in the measure of neuroticism among SADF and SNADF (Table 11).

The tables show that both the groups differ significantly in their personality correlates. ADF were found to be high on neuroticism and extraversion, in comparison to NADF at < 0.01 level. Among SADF and SNADF, extraversion was high in SADF, but there was no difference in neuroticism between both SADF and SNADF.

## Discussion

The present study examined the relationship among personality correlates, family dynamics, and attachment styles in ADF and their sons (SADF) and NADF and their sons (SNADF). The results of the present study are discussed with reference to the research in this area and the hypotheses of the study.

**Table 7. Comparison of alcohol dependent fathers (ADF), non-alcohol dependent fathers (NADF), sons of alcohol dependent fathers (SADF), and sons of alcohol nondependent fathers (SNADF) in personality correlates using ANOVA test**

		n	Mean	Std. deviation		Sum of squares	df	Mean square	F	Sig
Extraversion	ADF	50	11.28	3.051	Between groups	301.220	3	100.407	7.832	.000*
	NADF	50	9.46	3.221	Within groups	2512.600	196	12.819		
	SADF	50	12.78	3.851	Total	2813.820	199			
	NSADF	50	10.36	4.095						
	Total	200	10.97	3.760						
Neuroticism	ADF	50	14.72	4.408	Between groups	1008.900	3	336.300	7.239	.000*
	NADF	50	8.38	3.790	Within groups	9105.480	196	46.457		
	SADF	50	11.24	3.900	Total	10114.380	199			
	SNADF	50	11.30	11.697						
	Total	200	11.41	7.129						

Significant level is at \*p < 0.01

**Table 8. Multiple comparisons in the factor of extraversion between the groups and within the groups using one-way ANOVA**

	Sum of squares	df	Mean square	F	Sig
Between groups	301.220	3	100.407	7.832	.000*
Within groups	2512.600	196	12.819		
Total	2813.820	199			

Significant level is at \*p < 0.01.

**Table 10. Multiple comparisons in the factor of neuroticism between the groups and within the groups using one-way ANOVA**

	Sum of squares	df	Mean square	F	Sig
Between groups	1008.900	3	336.300	7.239	.000*
Within groups	9105.480	196	46.457		
Total	10114.380	199			

Significant level is at \*p < 0.01.

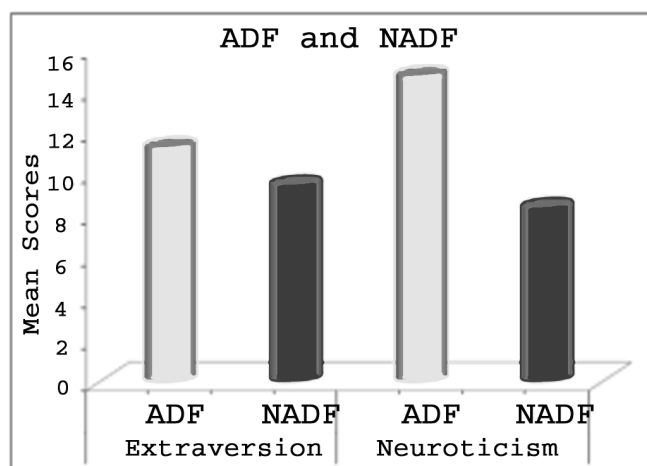
**Table 9. Comparison in the factor of extraversion between the groups using Tukey's HSD post hoc analysis**

(I)	(J)	Mean difference (I-J)	Std error	Sig	95% confidence interval	
					Lower bound	Upper bound
ADF	NADF	1.820	.716	.054	-.04	3.68
SADF	SNADF	2.420*	.716	.005	.56	4.28

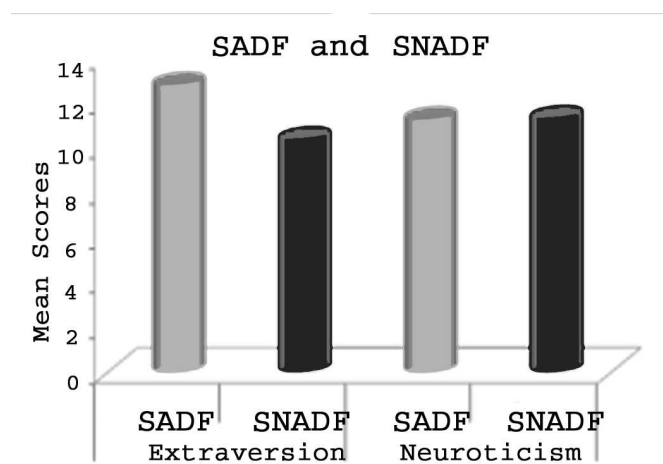
**Table 11. Comparison in the factor of neuroticism between the groups using Tukey's HSD post hoc analysis**

ADF	NADF	6.340*	1.363	.000	2.81	9.87
SADF	SNADF	-.060	1.363	1.000	-3.59	3.47

\*The mean difference is significant at the 0.01 level



**Figure 1** Bar chart depicting personality correlates in alcohol dependent fathers (ADF) and alcohol nondependent fathers (NADF).



**Figure 2** Bar chart depicting personality correlates in sons of alcohol dependent fathers (SADF) and sons of alcohol nondependent fathers (SNADF).

### *Socio-demographic characteristics: sample*

The data was generated from four groups of participants - group I, ADF (n = 50); group IA - SADF (n = 50); group II, NADF (n = 50); and group IIA, SNADF (n = 50). The total sample comprised of 200 participants. The groups were screened using MAST, and a clinical data sheet or checklist to meet the inclusion and exclusion criteria.

ADF group was defined, if they were in the hospital or institutional setting for treatment of alcoholism, having a diagnosis of ADS on ICD-10, and they fulfilled the criteria of alcohol dependence in MAST with cut-off score of 13 and above. NADF were defined, if they were not hospitalised for any alcohol related problems in the past and present, and didn't fulfill the criteria of alcohol dependence on ICD-10, and also on the MAST scale. The sample of the study was clinical for ADF, and from the community for NADF, who fulfilled the inclusion and exclusion criteria.

The groups were comparable in age, as results suggest that there is no significant difference in the mean ages among the fathers and the sons in both the groups. The two groups did not differ significantly in the level of education. When groups were compared in terms of occupation, it was found that the number of employed persons in ADF was 46, and number of employed persons in NADF was 48. The difference in employment status between both groups is not statistically significant. In the sons group, students were more in number, i.e. 39 SNADF and 32 SADF were students.

The family structure of both the groups had no significant difference in joint, nuclear or extended level. The number of children in ADF and NADF groups didn't differ significantly. In the SES, KPSS was administered for screening, as the inclusion criteria of the study was to study only population from middle SES; so, when comparison between lower middle class and upper middle class was done, there was no significant difference found in both the groups.

Hence, comparison of two groups on the above socio-demographic characteristics indicates that there is no significant difference, and the sample was homogeneous. Hence, both the groups were comparable with regard to the key variables under study.

Though the alcohol use among sons of both the groups didn't differ significantly, it is seen that the number of SADF using alcohol was seven, and the number of SNADF was four, indicating an upward trend in using alcohol by SADF. This is seen in many researches done in alcohol population, wherein SADF appeared to be at high risk for the development of alcohol dependence. Studies have well documented the co-occurring relationship between parental alcoholism and its influence upon son's alcohol use and dependence.[41,42]

The clinical checklist to assess for the debilitating chronic physical illness and other physical illnesses in the study population indicates no significant difference in various clinical symptoms. In NADF, 56.1% had no physical illness, and in ADF, 43.9% had no illnesses. And among ADF, 69.2 % had hypertension, and 53.8% had diabetes, and among NADF, 30.8% had hypertension, and 46.2% had diabetes, indicating high rate of percentages of physical illness in ADF. As the scores were not statistically significant, both the groups are comparable in the clinical data, but the influence of alcohol on the physical health of an individual couldn't be undermined.

The present study is the first study done in Assam among ADF and their children. Influence of cultural factors is reported in studies of alcoholism. Various tribal/ethnic groups in India have reported to use alcohol as their custom

and a daily ritual, which is not seen as a problem. Hence, tribal population was excluded in our study.

The few studies that have examined the sex of the alcoholic parent suggest that there may be differential impact of parental alcoholism on men versus women children, raising the important issue of considering the sex of adult children of alcoholics (ACOA) in relation with the sex of the alcoholic parent. Most of the studies suggest that the association is greater when the parent and child are of the same sex. Our study included fathers and sons to evaluate their associations, as it is reported to be greater.

Most of the available studies have relied primarily on clinical rather than community samples. Many studies that have used nonclinical samples, most are of college students, who may represent a more resilient subset of the ACOA population. Thus, studies of college age ACOAs may underpredict risk and dysfunctions in them and their family atmosphere, and may also have limited generalisability to community samples of young adults. In order to reduce the sample bias, we included various segments of children from and above 15 years, who have studied till class X, so that they could comprehend the questionnaire and respond. Hence, we included a clinical sample for ADS, where diagnosis of ADS is done by a treating team, and same treatment regimen was being followed, and the other group was non-alcohol dependent. Hence, our study had a control group to compare with the alcohol group, which added value to the research.

Little empirical research has investigated the interaction between family history for alcoholism and SES. Some researchers had reported a significant relationship between a measure of childhood socio-economic stress to alcoholism and dependence. Some studies have reported low SES, and some high SES contributing more to alcohol dependence and family dysfunctions. Hence, our study had included only the middle SES to decrease the sampling bias.

The studies didn't screen for chronic physical illness which might affect offspring attachment and care giving behaviour. Hence, we screened the groups across various debilitating physical illnesses by a clinical data sheet to look for any associations, which was not noted in earlier research work.

Various studies found that neuroticism was positively associated with risk for alcohol use. Similarly, few reported that negative emotionality, which correlates with neuroticism, contributed to differentiation between non-alcohol and alcohol users. Hence, measures of more specific personality features with EPI had helped to clarify the relationship between personality and alcohol use, for which we used EPI too in our study. Considering the influence of personality variables in the pathogenesis of alcoholism, this

study is believed to throw some light into the high risk family environment for development of alcohol use in children that would thereby help in detection, prevention, and treatment of alcoholism from intergenerational perspective.

### ***Personality correlates and its significance among ADF and NADF***

The first two objectives of the present study were to examine the personality variables of ADF and their sons, and to examine the personality variables of NADF and their sons, which were discussed in the light of the literatures present.

To fulfill the objectives, the first two hypotheses framed were ADF would not differ from NADF on extraversion, and ADF would be higher on neuroticism than NADF. To examine this, EPI form 'A' was administered, which had two dimensions, i.e. extraversion and neuroticism.

Research findings pertaining to the first dimension, extraversion, have been found to be inconsistent. There are studies observing low extraversion in heavy users of alcohol,[43-45] while some studies have observed high scores for heavy users on extraversion[46] and its subcomponents, sociability and impulsivity. Similarly, in terms of the five-factor model of personality, individuals prone to abuse intoxicating substances have been characterised by low extraversion, agreeableness,[47] and conscientiousness,[47-49] as well as high neuroticism[47,49] and openness.[49]

In view of some previous studies, the hypothesis of the study proposed was that ADF would not differ from NADF on extraversion. But the findings indicate a significant difference in ADF having a mean score of 11.28, and the NADF having a mean score of 9.46, with a 't' value of 2.901, which is significant at  $p < 0.01$  level. The null-hypothesis that ADF would not differ from NADF was rejected, as significant difference was found in both the groups, showing ADF to be high on extraversion in comparison to NADF. Some of the earlier research studies[20,50-53] are found to be consistent with the present study findings. In these early studies, heavier drinkers were described as pleasure seeking, extroverted, impulsive, and rebellious and nonconforming. An Indian study[54] found that psychological assessment of alcoholism in men reveal that alcohol-dependent individuals show significantly high neuroticism, extraversion, anxiety, depression, psychopathic deviation, stressful life events, and significantly low self-esteem as compared with normal control subjects.

The greater extraversion reported by men alcohol users may be a reflection of the need to be independent due to ambivalence about relying on others, a phenomenon

frequently reported in the clinical literature on alcoholism.[55] The finding of significantly higher scores on extraversion also indicate that alcohol-dependent subjects are characterised by traits such as being more assertive, dominant, sociable, carefree and venturesome, as compared to non-dependent people. This finding is in agreement with Mathew *et al.*,[56] but not by King *et al.*[57]

Regarding the second dimension, results showed that there is significant difference in neuroticism between ADF and NADF. The mean scores in ADF is 14.72 and NADF is 8.38 with a 't' value of 7.712 which is significant at  $p < 0.01$  level. This indicates that neuroticism was higher in the ADF than the NADF. Most of the earlier studies[58-60] showed similar findings. They found that excitability, dominance, and aggressiveness were directly related to subsequent substance misuse and dependence, while neuroticism was found to be indirectly related to substance misuse. Barnow *et al.*[61] have found that alcohol users scored higher on neuroticism-stability dimension, but not on the neuroticism-extraversion dimension on EPI, and a study[62] showed similar results wherein higher neuroticism and depressive scores were seen among alcohol user population. Their affect was found to be dysregulated and behavioural disinhibition was significantly found. In the studies, a host of negative characteristics have been associated with substance use, from neuroticism to impulsivity.

Earlier findings also indicated that heavy alcohol or illicit drug (e.g. marijuana, cocaine, barbiturate, heroin, etc.) use is often related to depression and low self-esteem,[54,58] and a tendency to be overly anxious neurotic, psychopathic deviance, and high on extraversion, all of which are related to the Big Five factor of neuroticism. Comprehensive models of personality, such as the Big Three or the five-factor model of personality have been utilised to succinctly characterise the personality profiles of heavy substance users. In terms of Big Three model, heavy users appear to score high on measures of psychoticism and neuroticism.[43,63] In various studies and alcohol theories, it has been accepted that some people drink alcohol (or use drugs) to relieve their negative affect or to enhance their positive affect.[64] Hence, in order to regulate the affect and negative psychological feature of neuroticism, there could be associations between the two in the present study too.

#### ***Personality correlates and its significance among SADF and SNADF***

The third hypothesis of the study was SADF will not differ on extraversion from SNADF. In the domain of extraversion, SADF had a mean score of 12.78 and SNADF had a mean score of 10.36 with a 't' score of 3.044 which is significant at  $p < 0.01$  level, indicating that SADF were extroverts, compared to SNADF group. Hence, the null hypothesis stated in our study was rejected.

There are several studies that have identified and clarified some of the basic "rules" operating in an alcohol user's home,[65] and one of them is, "It is not appropriate to express feelings openly". Feelings were often not allowed to be expressed or addressed openly in the alcohol user's family system. According to those studies, the child may often limit communications with others outside their home in order to maintain the family secrets and hence, are introverts. In an alcohol abusing family environment, when an expression would be received positively, and when negatively, was difficult to predict or assess; hence, the rule of the child was always to "keep communications at the minimum". Keeping in view of these earlier studies, the null hypothesis framed in the present study as SADF would not be high on extraversion, was rejected by the present findings.

The greater degree of autonomy/independence found among SADF in the present sample may indicate an adaptive response to parental alcoholism that has resulted in extroverted qualities useful in endeavours, such as school or work. Thus, the roles adapted by SADF in response to family disorganisation and confusion may encourage some children to acquire a greater degree of responsibility and to exercise greater decision-making than that generally found in SNADF. Extraversion in their temperament could prove beneficial for them too, or may lead them to risk taking behaviour like substance abuse. Some earlier studies have been consistent to this finding, as those studies reported that heavy drinkers were more pleasure seeking, extroverted, impulsive and rebellious, non-conforming, and shows broad range of externalising and internalising symptoms.[66-70] A study by Elkins and his colleagues[71] depicted that families with fathers' history of substance abuse was associated with lower constraints, extraversion, lower control, and harm avoidance. Hence, as per these studies, personality might be one indicator of familial risk for substance abuse during the developmental period.

A study done by Cloninger and his colleagues[26] suggested that neurobiological mechanism could interact with childhood temperament or personality to increase their susceptibility to alcoholism. They also reported that high novelty seeking and low harm avoidance which are characteristics of an extrovert and impulsive childhood personality are strongly related to adult alcohol abuse.[26] Hence, SADF displaying extraversion could be at a greater risk to become alcohol dependent later. For example, the young child with poor behavioural control and emotional dysregulation is particularly inclined toward developing a conduct disorder; and this personality disposition is associated with an increased risk for alcoholism in adulthood.



Research also suggests that certain personality traits, specifically antisocial and neurotic traits, appear to precede the onset of alcoholism.[72-74] It is known that most personality development occurs during the first few years of life, known to be the critical period in one's life, when family environment and interregional patterns have significant influences. At each phase of the developmental cycle in life, the environment to which the person is exposed, exerts either a risk inheriting or risk attenuating effect on the person. Thus, the risk of developing alcohol or substance abuse problems should be viewed as an ongoing dynamic process of interaction between the individual and the environment. In the present study, it was seen that the number of SADF using alcohol was higher than the number of SNADF; hence, showing vulnerability in this population which is again reported by earlier studies.

Studies conducted in this decade[17,75-78] reported that externalising symptoms were much higher among COAs compared to non-COAs, which is again consistent with our findings. Hence, the present findings are suggestive that SADF represent a group at risk for early onset of psychiatric problems and alcoholism; so, early prevention and intervention programmes are important as personality correlates could precede alcohol use and abuse in this population.

The fourth hypothesis of the study was that SADF will be higher on neuroticism than SNADF. The findings suggested that in the dimension of neuroticism, the mean scores of SADF was 11.24 and mean scores of SNADF was found to be 11.30, with a 't' value of -0.034, which was not found to be significant indicating that the SADF were not found to be high on neuroticism as hypothesised in the present study. Hence, researcher hypothesis was rejected. Some earlier studies[79] were of the opinion that COAs are more resilient, and could be extremely functional with high quality of life, and may have developed particular qualities that have helped to ameliorate some of the maladaptive effects of parental alcoholism. In those studies, the confounding variables (a confounding variable, also called as confounding factor, lurking variable, or confounder, is an extraneous variable in a statistical or research model that can influence the study variable; hence, that needs to be experimentally controlled) were family dysfunctions, family illness, and SES. As Werner[80] had reported about the presence of nurturance by other substitute caregivers, trusting and mutually respecting relationship with the non-problematic parent, a new sense of meaning in life, faith and social networks as potential protective factors, our findings could be explained by the same as we have not tried to control these family and other influences. Many other researchers have demonstrated that individuals from dysfunctional families often present with issues very similar to ADF. Resiliency factors often serve as a protective

function and help the individual cope with life's significant stressors.

ACOs are a very heterogeneous group of population and it cannot be said that all ACOs will develop emotional or adjustment problems, but there is supportive evidence of a heightened vulnerability.[81,82] In contrary, some researchers have stated that many SADF develop neither alcoholism nor any psychopathology or any extreme personality variants.[83,84] Some children develop resiliency despite the adverse features of parental alcoholism and associated pathologies, which are consistent with the present findings. The earlier studies which supported that a good relationship with a non-alcohol dependent parent could serve as a protective mechanism for son's personality to be functional and not disruptive, could be explained for our sample too. In one-way ANOVA between and within the groups with "F" ratios of 7.832 in extraversion and 7.239 in neuroticism were found to be significant at  $p < 0.01$  level of significance. As there was significant difference found in ANOVA, post hoc analysis was carried out and the results showed the same results as in "t" tests elaborated above.

### *Implications of the study*

The findings of the present study have helped to identify some of the significant factors that are present in families with ADF. The findings from the study have implications for planning family therapy in alcohol user's families. The results highlight the fact that in such families it would be essential to probe into the nature of their personality correlates, as these are likely to be potential contributory factors. Implications for future research will then be to examine the association between personality and family dynamics at different developmental stages of life, and elaborate on the way the alcoholism may moderate these associations.

An incidental finding of the study was that there was significant number of children (seven) taking alcohol, though not in the dependence pattern, more in the families with fathers with ADS. While the scores did not reach clinically significant levels, they were close to it, indicating that this group was at high risk for alcohol dependency. Hence, in families with ADF, it would be important to specifically weigh their son's level of alcohol intake, and factors that could lead to them becoming dependent on alcohol in future. Likewise, in these children of ADF, it would be useful to probe into the quality of family relationship, their personality, and attachment styles as potential stressors.

The findings of this study have definite implications for intervention in de-addiction settings. It highlights the fact that any effective de-addiction programme must

acknowledge the 'need' of children from families with ADF to overcome and deal with various deficits in their psychosocial functioning. The involvement of children in most de-addiction programmes in India is often peripheral, if not totally non-existent. It is seen that when spouse is frequently involved for marital therapy, conflict resolution, and anti-abuse compliance, the therapeutic needs of children trapped in such families are most often ignored. Currently, many COAs remain unidentified within schools, and may not be receiving the counselling services that they deserve and require for their issues relating to family alcoholism. It is also presumed that the family dysfunctionality of such children places them at high risk for adverse academic, physiological, emotional, and social consequences. Hence, it becomes imperative for the school counsellor to identify such children in distress, and to provide them with supportive services besides intervention with families to the extent possible. Knowledge of fathers' alcohol use and abuse may be used to determine children who are at added risk of problematic alcohol use later in life, and so special guidance, support, and treatment can be targeted to these families.

In the Indian scenario where the majority of schools do not have a professional counsellor, this important task needs to be addressed by teachers who are in a position to identify such children. Intervention with COAs must involve resolution of individualised issues and problems pertaining to adolescence as well as parental alcoholism. The need of the hour is to develop programmes or therapeutic strategies for COAs with a strong focus on strengthening resilience in them, and to inculcate desirable personality traits and enhance their psychosocial functioning through appropriate psychotherapeutic procedures.

In conclusion, the results of this study suggested that clinicians must have a thorough knowledge of the impact of addiction upon the development of emotional ties when working with either COAs or ACOAs.

#### ***Limitation of the study***

Findings are from self-report measures, so high susceptibility to social desirability biases is present. Hence, the use of interview schedule would help in more in-depth exploration; because the use of self-report measures as well as the lack of collateral informants may well have contributed to bias in this research.

The sampling was a purposive sample (non-tribal middle SES and men); therefore, the generalisation of the findings is limited to those who share the sample characteristics. Sampling bias makes it difficult to generalise the findings to alcohol user's population at large. The alcohol user's group was from the clinical setting which means they are very severe, and that offspring's status also

is likely to be very severe. Most individuals with alcohol use disorders do not seek treatment, and they are considered different from those currently on treatment.

The study is cross-sectional in nature; due to which, the cause-effect relationship between personality, attachment styles, and family influences cannot be commented upon. Hence, a longitudinal design will be useful to draw inferences on the various variables contributing to alcoholism.

Several researchers have indicated that alcohol user's families cannot be discriminated from dysfunctional families, and have suggested that researchers need to better understand family dysfunction regardless of parental alcoholism status. The present study focused on differences between alcohol user and non-alcohol user families on dimensions of family functioning, rather than attempting to identify factors that may predict or moderate family dysfunction in general like divorce, illness, and marital conflicts. The above mentioned co-factors were not controlled.

#### ***Suggestion for future research***

As for the direction of future research, a sophisticated qualitative investigation could do much to ease out possible moderating and confounding variables among ACOA populations, and might provide a refined understanding of adult attachment theory and its relationship to ACOAs' functioning. An examination of the influence of social and cultural underpinnings of personality, utilising perhaps multiple measures of personality and relationship satisfaction, might provide even more clues about the role, this construct plays in ACOAs' functioning and relationship dynamics.

In addition, studies designed to look at within-group differences among ACOAs as well as individuals from other dysfunctional environments would be helpful in order to shed more light on whether it is the dysfunctional environment per se or more specifically the alcohol user's experience that wields the greatest impact on issues of personality correlates and relationship satisfaction among ACOAs.

Identifying, categorising, and comparing subgroups of ACOAs based on such criteria as sex of the alcohol using parent, whether or not the primary caregiver was alcohol user, and length of exposure to problematic drinking behaviours may also provide valuable information as to what factors in the alcohol user's environment may either buffer or contribute to increased risk among members of this population.

Finally, longitudinal research examining developmental issues would also add clarity to this literature.

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