

## PERSONALITY TRAITS IN PATIENTS WITH ALCOHOL USE DISORDER: A CROSS-SECTIONAL STUDY

Neha Nilakh<sup>1</sup>, Haseeb Khan<sup>2</sup>, Sudhir Kumar<sup>3</sup>, Nitisha Verma<sup>4</sup>, Astha Singh<sup>5</sup>

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Corresponding Author:  
**Dr. Astha Singh,**

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<sup>1</sup>Junior Resident, Department of Psychiatry, Hind Institute of Medical Sciences, Barabanki, India.  
<sup>2</sup>Professor and Head, Department of Psychiatry, Hind Institute of Medical Sciences, Barabanki, India.

<sup>3</sup>Dean & Pro-Vice Chancellor, Dr. KNS Memorial Institute of Medical Sciences, Barabanki, India.

<sup>4</sup>Assistant Professor, Department of Psychiatry, ABVIMS & Dr. Ram Manohar Lohia Hospital, New Delhi, India.

<sup>5</sup>Associate Professor, Department of Psychiatry, Hind Institute of Medical Sciences, Barabanki, India.

### Abstract

**Background:** Alcohol Use Disorder (AUD) is a significant public health concern, with a notable gap in research regarding the relationship between personality traits and AUD severity in Indian population. Despite the prevalence of AUD, particularly alarming levels of problem and dependent users, a major proportion remains untreated. While studies from Western countries have identified associations between certain personality traits and AUD risk, there is limited research in the Indian context. Primary aim is to identify personality traits in AUD patients, with secondary objectives to assess personality profiles and their association with AUD severity. **Materials and Methods:** A cross-sectional study was conducted on patients diagnosed with AUD. Consecutive sampling was used, and patients meeting inclusion criteria were permitted to participate. The diagnosis was made using AUD criteria as per DSM 5 and subcategorized as mild, moderate, and severe. Personality traits were assessed by NEO-FFI 3. One-way ANOVA was used to compare three groups on each personality trait. Tukey's multiple comparison test was used to determine differences in two groups at a time. **Result:** 60 participants were subcategorized as mild, moderate & severe and were 4, 32 & 24 in number respectively. Significant differences were observed in Neuroticism (NT), Extraversion (ET), Agreeableness (AT), and Conscientiousness (CT) T-scores across AUD severity groups. Notably, the mild group exhibited lower neuroticism and higher agreeableness and conscientiousness than moderate and severe groups. Extraversion showed similar trends, while openness displayed no significant variation. **Conclusion:** Study sheds light on intricate relationship between personality traits and AUD. It highlights significant role of personality traits, such as neuroticism and extraversion, in predisposing individuals to AUD. Tailoring interventions to address specific traits can enhance effectiveness of treatment strategies.

## INTRODUCTION

The National Mental Health Survey (NHMS) 2016 reported that approximately 16 crore people in India, constituting 14.6% of the population, are current users of alcohol. Of these, 5.2% are problem users, and 2.7% are dependent users, indicating that one in three alcohol consumers in India requires help for alcohol-related disorders, with 4.6% (about 5 crores) needing immediate treatment. However, 86% of these individuals are not receiving any treatment.<sup>[1]</sup>

After approximately, 3 years in 2019, the Magnitude of Substance Abuse in India Survey was conducted that showed the prevalence of alcohol use disorder among individuals needing some kind of intervention has increased to 8.6 crores.<sup>[2]</sup>

Alcohol Use Disorder (AUD) is a pervasive and complex condition that impacts millions of individuals worldwide, leading to significant physical, psychological, and social consequences. Understanding the factors that contribute to the development and progression of AUD is crucial for effective prevention, intervention, and treatment

strategies. Among these factors, personality traits have gathered considerable attention as potential predictors of alcohol use and its severity.<sup>[3]</sup>

Research on personality traits shows a distinct relationship with alcohol use disorder. Such characteristics are a group of qualitatively measurable characteristics that permit the assessment of particular individual differences.<sup>[4,5]</sup>

Five-Factor Model (FFM), includes neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. These personality traits have been extensively studied with various mental health conditions, including substance use disorders. This model was proposed by Digman & Goldberg, 1990.<sup>[6-8]</sup> The FFM framework (Costa & McCrae, 1992) has been established and shown to be a reliable tool for assessing personality.<sup>[9,10]</sup>

Previous studies showed that increased neuroticism and reduced conscientiousness traits are possible causes of alcohol use disorder. At the same time, it was claimed that there was no real correlation between alcohol use disorder and extraversion, agreeableness, or openness.<sup>[11-15]</sup>

There are numerous evidence of association of personality traits with AUD in Western countries. However, such studies in India are few, and vast areas in this field have remained untouched, this study is done to bridge this gap.

## MATERIALS AND METHODS

The study was conducted over a year at a tertiary care center in Barabanki, utilizing a cross-sectional design. 60 participants aged 18-55 years, diagnosed with AUD per DSM-5 criteria were included. The sample size was determined using Cochran's formula taking the prevalence of AUD as 7.9% with a 5% margin of error and 95% confidence interval. Our study has adhered to rigorous ethical standards. Participants were provided written informed consent after being fully informed about the study's purpose, procedures, potential risks, and benefits. Anonymity and confidentiality were maintained by assigning unique codes and securely storing data. Efforts to minimize harm included screening participants and providing supportive measures. The study received ethics committee approval, ensuring compliance with all ethical guidelines. Integrity and transparency were upheld through accurate record-keeping and honest reporting of findings. Participants' well-being was prioritized, and a thorough debriefing was conducted post-participation. Data was used solely for the study's stated purposes. These measures ensured participant protection and maintained research integrity.

Sociodemographic data was collected using semi-structured proforma. Diagnosis of Alcohol Use Disorder was made as per DSM 5(Diagnostic and Statistical Manual 5) Criteria.

Adult participants with Alcohol Use Disorder were recruited from inpatients and outpatients of various departments like psychiatry, medicine, surgery, etc.

and sub classified into mild, moderate & severe sub-groups. NEO personality inventory (NEO-FFI3) (Costa and McCrae) questionnaire was administered.

**Scales - Semi-structured patient proforma:** (Name, Age/Sex, Father's name, Address, Mobile No., Religion, Occupation, Chief complaints, Past History, co-morbidities like Diabetes Mellitus, hypertension, etc.)

**Alcohol Use Disorder criteria as per DSM 5:** DSM-5 integrates the two DSM-IV disorders, alcohol abuse and alcohol dependence, into a single disorder called alcohol use disorder (AUD) with mild, moderate, and severe sub-classifications.

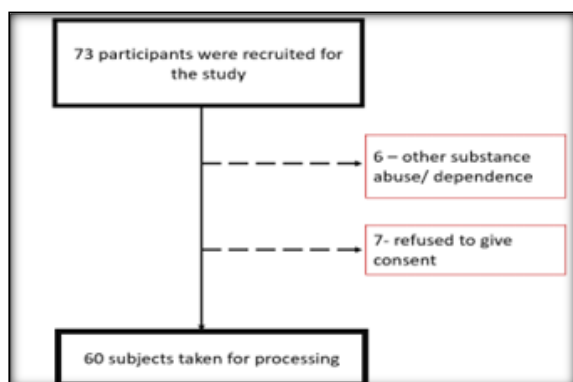
Under DSM-5, anyone meeting any 2 or more of the 11 criteria during the same 12-month period would receive a diagnosis of AUD.

**NEO-Five Factor Inventory (NEO-FFI 3):** This personality model, consisting of five higher-order personality traits (Neuroticism (NT), Extraversion (ET), Openness (OT), Conscientiousness (CT), and Agreeableness (AT), is understood as the most extensive concept of personality structure. NEO-FFI (Costa and McCrae) is a 60-item version of the NEO Personality Inventory that provides a brief, comprehensive measure of the five domains. It can be administered individually or in groups, and in this study, it will be administered individually. The internal consistency of the scale is good, with a Cronbach-alpha score of 0.6-0.9 on various scales. Test-retest reliability ranges from 0.66 to 0.92. The NEO-FFI-3 package was purchased from Prasad Psycho Pvt Ltd. which is the official distributor in India.

**Statistical Analysis:** Data collected via semi-structured proforma and NEO-FFI-3 were analyzed using SPSS software. Shapiro-Wilk's test confirmed normality and one-way ANOVA was employed to compare personality trait T-scores. Tukey's test facilitated multiple comparisons between AUD severity groups. A significance level of  $p < 0.05$  was considered statistically significant. Effect sizes with 95% Confidence Intervals (CI) were also reported for the comparisons.

## RESULTS

The study included 60 participants (Figure 1) aged 18-55 years, diagnosed with AUD per DSM-5 criteria. Participants were categorized into mild (n=4), moderate (n=32), and severe (n=24) groups. [Table 1 & 2]



**Figure 1: enrollment of participants**

The analysis of personality traits among individuals with varying severity levels of Alcohol Use Disorder (AUD), as presented in [Table 3], reveals significant differences across several dimensions. Neuroticism (NT) scores exhibit a notable increase with greater severity of AUD, indicating higher levels of emotional instability and vulnerability among individuals with severe AUD compared to those with milder forms. Extraversion (ET) scores show a contrasting pattern, with individuals in the severe AUD group displaying higher extraversion compared to those in the mild or moderate groups. Agreeableness (AT) and Conscientiousness (CT) scores are significantly lower in individuals with severe AUD, suggesting reduced levels of cooperation and self-discipline compared to

individuals with milder AUD. Conversely, Openness (OT) scores do not vary significantly across severity groups, indicating consistent levels of openness to experiences regardless of AUD severity. [Table 5] summarizes the results of Tukey's test, which was used to conduct pairwise comparisons between severity groups for each personality trait. This test helps identify which specific pairs of severity groups show statistically significant differences in their T-scores for each personality trait.

**Table 1: Socio-Demographic Details**

Variables		Cases (n=50)
Age(yrs.)	Mean age	32.8 yrs.
Education	SSC or lower, SSC, non graduate	51
	Graduate and above	9
Occupation	Working	54
	Not working	5
Family Background	Rural	48
	Urban	12
Marital Status	Unmarried	9
	Married	47
	Divorced/Separated/Widower	4
Family h/o of alcoholism	Yes	38
	No	22

**Table 2: categorization of patients to mild, moderate & severe**

Patients categorized as per DSM 5 criteria into:-		
Mild (2-3 symptoms)	Moderate (4-5 symptoms)	Severe (6 or more symptoms)
4	32	24

**Table 3: Comparison of personality traits across aud severity groups (One-Way ANOVA).**

Variables	Mild (Mean ± SD)	Moderate (Mean ± SD)	Severe (Mean ± SD)	Anova Statistic (P-Value)
Neuroticism (NT)	25.50 ± 0.58	38.63 ± 10.27	58.38 ± 5.92	49.60 (<0.001)
Extraversion (ET)	29.50 ± 9.00	48.78 ± 7.07	46.92 ± 8.58	10.82 (<0.001)
Openness (OT)	39.75 ± 9.22	43.41 ± 11.48	44.21 ± 8.82	0.32 (0.728)
Agreeableness (AT)	60.50 ± 1.00	37.19 ± 13.65	36.25 ± 12.68	6.350 (0.003)
Conscientiousness (CT)	54.25 ± 2.50	44.16 ± 11.20	32.08 ± 10.24	12.937 (<0.001)

**Table 4: Tukey's test for multiple comparisons, one pair at a time**

Variables	Pair	Mean difference	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
NT	Mild v/s Moderate	-13.13	0.005	-22.11	-4.14
	Mild v/s Severe	-32.88	<0.001	-42.02	-23.73
	Moderate v/s Severe	-19.75	<0.001	-24.32	-15.18
ET	Mild v/s Moderate	-19.28	<0.001	-27.58	-10.98
	Mild v/s Severe	-17.42	<0.001	-25.87	-8.96
	Moderate v/s Severe	1.87	0.381	-2.36	6.09
OT	Mild v/s Moderate	-3.66	0.509	-14.67	7.36
	Mild v/s Severe	-4.46	0.429	-15.68	6.76
	Moderate v/s Severe	-0.80	0.776	-6.41	4.81
AT	Mild v/s Moderate	23.31	0.001	9.62	37.01
	Mild v/s Severe	24.25	0.001	10.31	38.19
	Moderate v/s Severe	0.94	0.789	-6.03	7.91
CT	Mild v/s Moderate	10.09	0.076	-1.09	21.28
	Mild v/s Severe	22.17	<0.001	10.78	33.55
	Moderate v/s Severe	12.07	<0.001	6.38	17.77

Trends of ANOVA are further supported by Tukey's test results, which confirm specific pairwise differences among severity groups for NT, ET, AT, and CT, underscoring the nuanced relationship between personality traits and AUD severity.

## DISCUSSION

The socio-demographic profile of individuals with Alcohol Use Disorder (AUD) in this study reveals that most are between the ages of 26 - 40 years, with

an average age of 32.8 years, consistent with similar studies.<sup>[16-18]</sup> This age group is most likely to show up in studies as even if people start consuming alcohol in early age, but start having dependence and problems due to its consumption after a few years, which makes them more likely to seek medical attention.

Unlike studies linking unemployment with AUD prevalence, many participants in this study were engaged in low-paying jobs, suggesting economic strain as a contributor to alcohol misuse alongside unemployment. The findings indicated that individuals in lower-income brackets, particularly those in low-paying or insecure jobs, are more likely to engage in harmful drinking patterns. Economic strain from low wages can lead to stress, which may contribute to alcohol misuse as a coping strategy. It is worth noting that being unemployed can lead to the development of drinking issues and AUD, or vice versa.<sup>[19]</sup>

A significant 63.33% reported a positive family history of AUD, highlighting a strong genetic predisposition supported by previous research indicating heritability across generations (95 % confidence limits are 32-73 %, often found among biological relatives across multiple generations).<sup>[20]</sup> Together, these studies show that the substantial genetic inclination and a favorable family history of AUD are significant risks. This genetic risk is often compounded by environmental factors, leading to a higher likelihood of developing AUD in individuals. Among 60 participants in the present study, the majority of participants belonged to moderate & severe sub-classifications as it is viewed that more patients present to OPD or get admitted when symptoms worsen and become unmanageable.

Personality traits assessed using the NEO Five-Factor Inventory (NEO-FFI) revealed significant associations with AUD severity. Higher neuroticism scores correlated with more severe AUD. This study also supports the findings of Littlefield et al., which states a drop in impulsivity and neuroticism was connected with a decrease in problem drinking from the ages of 18 to 35.<sup>[21]</sup> These studies underline a significant correlation between higher neuroticism scores and the severity of AUD. Individuals with high levels of neuroticism are more susceptible to stress and negative emotions, making them more likely to develop severe alcohol-related problems as they may use alcohol to manage their emotional distress.

In contrast to neuroticism, extraversion has shown a more nuanced relationship with the severity of Alcohol Use Disorder (AUD). This study indicates that while extraversion is a significant factor in distinguishing between mild and severe AUD, its influence may taper off when comparing moderate to severe cases. This could be due to the increasing influence of other psychological, social, or environmental factors as AUD severity escalates. This nuanced finding diverges from prior research by Ruiz et al. linking high extraversion with problem drinking.<sup>[22]</sup>

In the current study domains of conscientiousness & agreeableness were inversely related to the severity of AUD as observed in previous studies, this means that individuals who score higher in these traits are generally less likely to develop AUD aligning with literature suggesting these traits may protect against alcohol misuse by promoting self-discipline and interpersonal harmony. Studies demonstrate that higher levels of conscientiousness and agreeableness are protective factors against AUD. More conscientious individuals tend to avoid risky behaviors, including heavy drinking, while those who are more agreeable are likely to maintain healthy social connections and avoid conflicts that could lead to alcohol misuse. Conversely, lower levels of these traits can increase the risk of developing AUD and experiencing its more severe forms.<sup>[23,24]</sup>

Additionally, Openness scores did not vary significantly across severity groups, contradicting studies suggesting openness to experience might increase vulnerability to AUD (Steward et al.). This discrepancy underscores the complexity of personality-AUD relationships and highlights the need for further cross-cultural research.<sup>[25]</sup> The lack of significant variation in openness scores across different severity groups indicates that other factors, including personality traits like neuroticism, conscientiousness, and agreeableness, as well as environmental and genetic factors, play a more crucial role in determining the progression of AUD.

## CONCLUSION

Alcohol Use disorder is an important contributor to morbidity in psychiatry. Milieu and entourage moderates' efforts while the ideal combination for management remains volatile. The association between AUD and personality traits is complex and multi-dimensional. This study illuminates the intricate relationship between personality traits and AUD, underscoring the roles of neuroticism and extraversion in predisposing individuals to AUD. Recognizing the importance of personality traits in both diagnosis and treatment is crucial. Tailoring interventions to address specific traits associated with AUD can enhance the effectiveness of treatment strategies. It was also learnt that addressing underlying personality traits and incorporating personality assessment into AUD treatment protocols could enhance treatment efficacy.

### Strengths

- This study is among the few in India to use the NEO Five-Factor Inventory (NEO-FFI) in AUD research, demonstrating robust internal consistency and reliability (Cronbach-alpha 0.6-0.9).
- The study aims to benefit in reducing AUD-related morbidity and mortality, addressing a critical public health concern.

## Limitations

- Study's small sample size and a single tertiary care center limits generalizability to broader populations.
- Participants were exclusively male, potentially overlooking gender-specific nuances in AUD and personality traits.

## Future Directives

Despite some limitations, our study adds to the existing literature, especially in Indian scenario. Several potential future directives for research in this area include:

- Longitudinal studies should be conducted, to explore how personality traits evolve in individuals with AUD and how personality changes may relate to the course of AUD. This approach can establish temporal relationships and identify critical periods for intervention.
- Moving beyond individual traits and exploring how combinations of personality traits may influence AUD risk and treatment outcomes. This approach aids in recognizing the interactive and synergistic effects of multiple traits.
- The role of cultural factors in shaping the relationship between both personality factors & AUD should be examined. Cultural differences may influence the way personality traits are expressed and their impact on alcohol-related behaviors.
- Personalized treatment approaches that consider individual personality differences may enhance treatment engagement and outcomes.

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