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Assessment of Personality Traits in Patients with Alcohol Dependence

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I. Introduction

Overall 5.1% of the global burden of the disease and injury is attributed to alcohol as measured by DALY[1]. As well as in India, according to national mental health survey (2014) [2] there is a high prevalence of substance use disorders (SUDs) which account for 22.4 % and the prevalence of alcohol use disorder (dependence and harmful use/alcohol abuse) was 4.6%. According to the ICD-10, the alcohol dependence is a cluster of physiological, behavioral, and cognitive phenomena in which the use of a substance takes on a much higher priority for a given individual than other behaviors that once had greater value. Variety of factors both at individual and society level affect the initiation, pattern of drinking and continuation of its use.Genetic (biological vulnerability), psychological and environmental factors influence use of psychoactive substances in wide range of population. The personality factors may influence use of drugs at several levels which might affect the chances of relapse and subsequent outcome in alcohol users. Thus, relationship between personality and drug use is highly complex and extremely broad.According to DSM-5, Personality traits are enduring patterns of perceiving, relating to and thinking about oneself and the environment.

Among the personality theories, five-factor model has gained much popularity and acceptance. These five factors are:

1. Neuroticism (N) is a long-term tendency to experience negative emotions such as nervousness, tension, anxiety, and depression.
2. Extraversion (E) is characterized by friendliness, sociability, warmth, assertiveness, talkative and outgoing nature.
3. Openness to experience (O) is associated with artistic sensitivity, vivid fantasy, and imaginativeness, creativity, unconventional, and wide interests.
4. Agreeableness (A) is characterized by altruism, trust, modesty, kindness, compassion, and sympathy.
5. Conscientiousness (C) is a tendency to be well organized and dependable, disciplined, reliable and efficient.

Much research has been done to understand role of personality traits in alcohol users. A recent meta-analysis done by Malouff et al. (2007)[3], found that alcohol involvement was associated with low scores on conscientiousness, agreeableness, and high scores on neuroticism. However, the gaps in the understanding of personality role in alcohol use is wide and has to be explored.

II. Aims & objectives

To assess personality traits in individuals with alcohol dependence.

Methodology:

Study setting: Department of Psychiatry, government hospital for mental care, Visakhapatnam.
Study design: Descriptive cross-sectional study
Study sample: 50
Inclusion criteria:

- Age between 18-65yrs with minimum 10^{th}-grade reading level
- Diagnosed with alcohol dependence according to ICD-10
- After completion of detoxification phase
- Informed consent

Exclusion criteria:

- Patients with organic mental disorder
- Patients with co-morbid psychiatric disorders.

Tools:

- Semistructured questionnaire for collecting demographic and alcohol-related clinical variables
- Revised NEO Five-Factor Inventory (NEO-FFI-R) for assessing personality traits

It is a 60-item inventory comprised of five personality factors, Neuroticism (N), Extraversion (E), Openness to experience (O, Agreeableness (A), and Conscientiousness (C) with 12 items per domain. It is rated on five-point Likert scale (0 = 'Strongly Disagree', 1 = 'Disagree', 2 = 'Neutral', 3 = 'Agree', to 4 = 'Strongly Agree') with internal consistency values ranging from 0.68-0.86.

III. Data Analysis

Statistical analysis was performed using SPSS version 23.

Distribution of patients based on demographic profile and clinical variables was studied using frequency and mean.Each of the five NEO-FFI personality factors Means and standard deviations were calculated

Each of 5 traits were compared with those of normal population norms and raw scores were converted into sex-specific standardized T-scores with a mean of 50 and a standard deviation of 10.

T scores result from a transformation of raw scores to standard z scores. The formula for a standard *z* score is $z = x - M / SD$

where:

- x is a raw score to be standardized.
- M is the mean of the normative sample.
- SD is the standard deviation of the normative sample.

T scores have a mean of 50 and a standard deviation of 10. Standard *z* scores can be converted to T scores using the formula, $T=10*z+50$

The calculated T Scores are represented graphically for better visual representation.

IV. Results

Table 1 shows the demographic and clinical characteristics of the study sample. About 64% (32) of the sample are in the age group of 30-40. Majority of the sample are married (74%), followed by unmarried 20% and separated 6%. About 66% are employed and 34% are unemployed. About 78% of the study sample were living in nuclear family and only 22% were part of joint family. Among clinical variables, the age at which individuals initiated alcohol consumption was before 25 yrs. in majority of the sample (78%) with remaining 22% after the age of 25yrs. The duration of alcohol intake is >10yrs in 44%, between 5 to 10yrs in 38% (cumulatively 82% have been taking alcohol from >5yrs) and remaining 18% taking from <5yrs. In the above sample, 92% have relapses > 5 times with only 8% did not have any previous relapses. With account to family history, majority (72%) of sample had history of alcohol use in the family members.

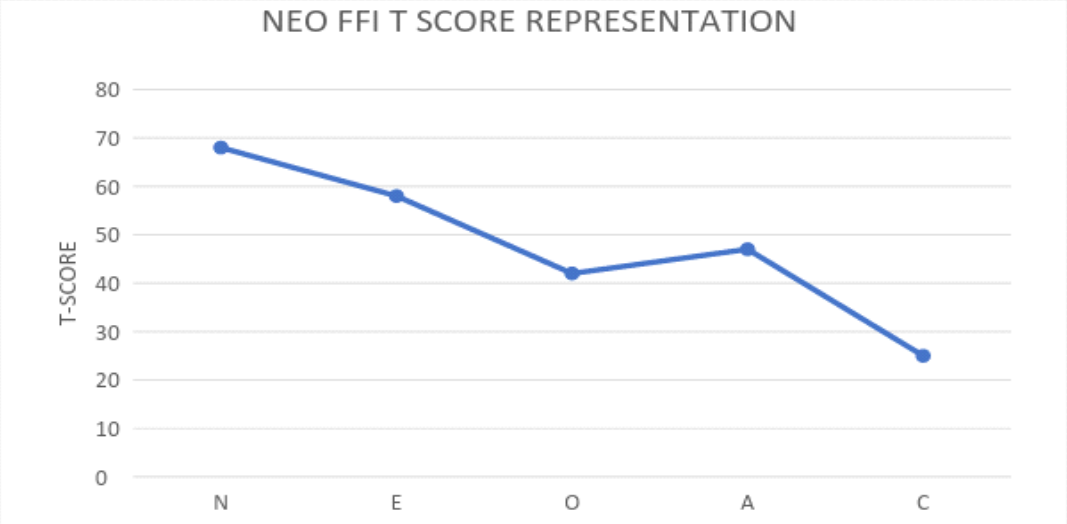
Table 1: Demographic and clinical profile of the sample

		Frequency (N=50)	Percentage (N%)
AGE GROUP(YRS)	20-30	18	36%
	30-40	32	64%
MARITAL STATUS	UNMARRIED	10	20%
	MARRIED	37	74%
	SEPARATED	3	6%
OCCUPATION	UNEMPLOYED	17	34%
	EMPLOYED	33	66%
FAMILY STRUCTURE	JOINT	11	22%
	NUCLEAR	39	78%
AGE OF INITIATION	After 25yrs	11	22%
	Before 25yrs	39	78%
DURATION OF INTAKE	<5yrs	9	18%
	5-10yrs	19	38%
	>10yrs	22	44%
NO. OF RELAPSES	0	4	8%
	1-5	28	56%
	5-10	18	36%
FAMILY H/O ALCOHOL INTAKE	YES	36	72%
	NO	14	28%

In the present study, mean raw scores are high in extraversion and neuroticism domains whereas the scores are low on conscientiousness. The interpretation of NEO-FFI traits based on T-scores: T-scores of > 55 are considered high, T-scores from 55 to 45 are considered average, and T-scores of < 44 are considered low. Based on T- scores, alcohol dependence is characterized by high neuroticism, high extraversion and average on agreeableness as well low openness to experience, low conscientiousness which is graphically represented in the figure 1.

Table 2 below contains the NEO-FFI mean raw scores, standard deviation, and T-Scores of the present sample.

Neo Ffi Domain Mean, Sd, T-Scores					
	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Mean	27.56	33.82	25.56	29.32	17.72
Std. Deviation	6.744	9.361	7.788	5.984	7.793
T Score	68	58	42	47	25



NEO-FFI Domains	Mean score	Standard deviation	Mean of normative sample	Mean difference
Neuroticism	27.56	6.744	15.79	11.77
Extraversion	33.82	9.361	28.74	5.08
Openness	25.56	7.788	30.19	-4.63
Agreeableness	29.32	5.984	31.11	-1.79
Conscientiousness	17.72	7.793	32.88	-15.16

The mean score obtained in this study in each of the five domains is compared with the mean scores obtained in the large sample study[4] (sample size=1492) of normal population by R Mc Crae, P.T.Costa Jr is shown in Figure.2. This study shows that in the study sample, the mean values of neuroticism, extraversion are higher and conscientiousness, openness are lower than mean of normal population.

V. Discussion

In the present study, there is high neuroticism and low conscientiousness among individuals with alcohol dependence. Generally, high neuroticism indicates a tendency to experience negative affects such as fear, sadness, anger, guilt, and disgust. These individuals are less able to control their impulses and coping abilities with stressful situations are poor.Thus these individuals may be using alcohol as a moderator to deal with negative emotions like anxiety and depression. These findings are consistent with the findings of meta-analysis by Malouff et al. (2007)[3] , Dubey et al.(2010)[5] , Kotov et al.(2010)[6] and Martin et al.(1994)[7] which reported higher levels of neuroticism and lower levels of conscientiousness in alcohol-related substance disorder individuals.

According to Cloninger's Type I/Type II model of alcoholism, the temperament measures of high novelty seeking (i.e. high impulsivity, exploratory behavior, extravagance, and disorderliness) and low harm avoidance (i.e. low worry, fear, shyness and fatigability) are associated with Type II alcoholism. Here in five-

factor model, high impulsivity correlates with high Neuroticism whereas disorderliness correlates with low conscientiousness and thus this may correlate with the Type II model of alcoholism.

In the present study alcohol dependence is associated with low conscientiousness. Conscientiousness is generally a measure of discipline, determination and ambitiousness Thus low conscientiousness individuals are generally disorganized, careless, less exacting in applying their moral principles as well more hedonistic and we can expect the alcohol use may be due their poor self-control and lack of discipline.
Also according to a study by Hair & Hampson e al. (2006)[8] , sensation seeking and impulsivity which are closely related to use of substance is negatively correlated with conscientiousness which support the low conscientiousness scores in alcohol dependence in this study. These findings are also consistent with findings of study by Malouff et al.(2007)[3] , Dubey et al.(2010)[5] and Martin et al.(1994)[7]

The high extraversion represents individuals who are sociable, crave for excitement and stimulation and are talkative. Thus in alcohol-dependent individuals, high scores on extraversion maybe due to their excitement seeking and exploratory behaviour related to the reward pathways of brain. In this study the alcohol dependence is associated with high extraversion which is supported by findings of earlier study by Dubey et al.(2010)[5].Openness to experience is dimension with imaginativeness, fantasy, and wide interests. The low T-scores in openness reflects conventional behavior with preference for familiar to novel and somewhat muted emotional responses. Thus this reflects alcohol-dependent individuals are not open to new experiences which is contrary to findings of earlier study by Dubey et al.(2010)[5].Agreeableness is a dimension of interpersonal tendencies and reflects compassion and positive attitude towards others. In the present study, there is no significant difference in this domain compared to normative population which is consistent with findings of previous study by Dubey et al.(2010)[5].

VI. Conclusion

This study concludes that alcohol dependence is associated with high neuroticism which explains the use of alcohol by these individuals as a pacifier for their negative emotional states. The high extraversion can be explained by the extravagant and exploratory nature of these individuals who initially take substance for fun and pleasure, however, may later end in dependence pattern. The low conscientiousness in these individuals explains lack of self-discipline in the continuation of abstinence from alcohol.

Limitations:
It does not include facet-level data of each domain as examination of facet scales provide fine analysis of a person or group.Sample size is small and being a cross-sectional study, it can't establish temporal relationship.
Lack of control group in the study.

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