



What addiction spells for the female psyche: a five-factor model personality profile comparison between alcohol dependence and multiple substance dependence in females

Abstract

Background: In spite of decades of research regarding substance dependence, till recently its manifestations were focused more so in males. The aim of the present study thus, was to explore and compare between the personality dimensions of females with addiction. **Methods:** For this purpose, 20 female patients having alcohol dependence and 20 female patients having multiple substance dependence were taken along with 20 matched female individuals for a healthy comparative group (HCG). All the groups were administered the sociodemographic clinical datasheet and NEO-Five Factor Inventory. Statistical analysis included Kruskal Wallis H test to find out the difference between the groups with substance dependence and HCG, followed by Mann Whitney U test as post hoc to find out the difference. **Results:** The results indicated that the groups with substance dependence differed significantly from HCG with respect to neuroticism, agreeableness, and conscientiousness. Furthermore, results showed that there was no significant difference between the groups on the other two factors of extraversion and openness to experience. Post hoc analysis revealed no significant difference amongst the group with alcohol dependence and the group with multiple substance dependence on these domains even though both differed from HCG. **Conclusion:** This implies that female patients with alcohol dependence and multiple substance dependence had a higher level of negative affect, lower tendency to agree and exhibit less conscientiousness, that is be self-disciplined or well organised and in adhering to rules which may be related to their substance dependence.

Keywords: Substance use. Women. Drug taking behaviour. Neuroticism.

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INTRODUCTION

Although abnormal patterns of substance use have been described since antiquity, however it was thought to occur only in males for a long time. But over the past few decades, more researchers have noted that women's consumption of psychoactive substances has increased considerably. Studies have pointed out that way more women drink, more so with a greater frequency and higher amounts.[1] Although when prevalence was studied, Western countries showed less difference between sexes (like 7.7% versus five per cent in females), earlier studies done in India showed a more distinct difference of an 11.9% versus 1.7%.[2] Coming to more recent studies in 2019 by the National Drug Dependence Treatment Centre (NDDTC), All India Institute of Medical Sciences (AIIMS),[3] findings indicated that even though the prevalence of alcohol is generally as high as a whopping 2.9 crore people, yet even then, prevalence found in women is way lesser than in men. But the World Health Organization (WHO) studies show that existing research also points to

disparate opportunities related to sociocultural norms in access to illicit drugs as one of the reasons for differences in prevalence. Also, women with substance dependence may have to face way more social stigma, barriers, and poor social support than men which makes it even more difficult to access healthcare and seek treatment.[4] Speaking from an aetiological perspective, out of various factors studied previously, personality constructs have shown considerable correlation with substance addiction repeatedly[5] and most studies have arguably been upon alcohol as its prevalence is both high and commonly detected.[6,7] Coming to personality, the big-five model has been studied quite frequently in many studies.[8] The five traits of personality as seen in the theory are neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Generally previous studies found neuroticism turned out as direct predictors of the development of harmful drinking behaviour in adolescents.[9] Apart from high neuroticism, low agreeableness and conscientiousness also showed considerable prediction.[10,11] Research findings

also indicated low extraversion,[12] agreeableness and conscientiousness,[13-15] as well as high neuroticism[16] and openness. So, the results are not unanimously similar. And adding to woes, an increasing range of available psychoactive substances have cropped up in the market in past few decades, which has resulted in individuals using different psychoactive substances simultaneously, i.e., multiple substance use.[17] Although some researchers have observed that a biopsychosocial interaction is most likely associated with polydrug taking behaviour,[18-20] factors like male gender, younger age, maternal alcohol dependence, fewer years of education, higher neuroticism scores, conduct disorder, and early alcohol use have also shown association too.[21] Thus in the present background, the aim of the current study is to see whether there is any significant difference in the personality dimensions of patients currently diagnosed with alcohol dependence syndrome (ADS) and patients currently diagnosed with multiple substance dependence syndrome (MDS) in comparison to healthy comparative group (HCG). The objective is to ascertain the significant difference, if any, in the personality dimensions of female patients currently diagnosed with ADS and female patients currently diagnosed with MDS in comparison to HCG.

METHODS

Study design

The study was a cross-sectional comparative study. For the group studied, the method of sampling was purposive sampling.

Duration

The study was conducted for a time period of two years from 2018 till 2020.

Sample

Ethics committee clearance was taken at the beginning of the study. Twenty female patients having ADS as per WHO's tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), Diagnostic Criteria for Research (DCR)[22] and 20 female patients having MDS as per ICD-10 DCR[22] were taken along with 20 matched females in HCG. The inclusion criteria were being presently diagnosed as having ADS according to ICD-10 DCR for the ADS group, having a diagnosis of MDS according to ICD-10 DCR for the MDS group, aged between 18 to 40 years, female gender with an educational qualification of minimum six years of formal education and willing to participate in the study. The patients with the diagnosis of ADS and MDS according to ICD-10 DCR,[22] diagnosed by two psychiatrists were initially screened based on inclusion and exclusion criteria (later being chronic medical illness, history of significant head injury, history of convulsion, history of other major psychiatric disorder including schizophrenia, patients with a history of pervasive developmental disorder or mental retardation or a state of alcohol intoxication during assessment). Matched HCG were screened based on inclusion and exclusion criteria. Written informed consent was taken from the patients. Following the ethical measures, all of them were administered the tests individually.

Measures

Sociodemographic and clinical datasheet

This was devised to assess various sociodemographic variables, like age in years, religion, education, occupation, residence, family type, siblings, order of birth, time spent with family, marital status, relationship status, duration of relationship, dating frequency, and frequency of meeting with friends. Clinical variables included age of onset, duration of intake, pattern, whether has substance alone or with others, role of emotions associated, whether would like to stop intake, reason for it, history of abstinence, decisions, past history of physical or psychological disorders, with dependence, family history of physical and psychological disorders, and any history of marital, sexual, or legal conflict.

NEO five factor inventory (NEO-FFI)[23]

It is a 60-item inventory, which is based on five-point Likert scale (zero = "strongly disagree", one = "disagree", two = "neutral", three = "agree", and four = "strongly agree"). It taps five personality factors, neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness with 12 items per domain. The internal consistency values vary from 0.68-0.86. It is one the most frequently used instruments to evaluate personality traits.

Statistical analysis

Normality of the distributions were tested whereby it was found that variables did not follow a normal distribution and thus non-parametric tests were considered. Descriptive analysis for which the measures of mean, standard deviation (SD), and percentages were computed to summarise the demographic and clinical data of the groups. Kruskal Wallis H Test was computed to see the significant difference between the groups. Mann Whitney U test had been performed as post hoc measure whenever Kruskal Wallis was significant. An alpha value of 0.01 and 0.05 was considered as significant.

RESULTS

Data were scored following the scoring criteria for each of the tests. All statistical analysis was carried out using the Statistical Package for the Social Sciences 16 (SPSS Inc., Chicago, 2001).[24] The analysis indicated that the average age of females in the group with ADS was 25.50 years (± 7.68) and for the group with MDS, they were younger with a mean age of 23.60 years (± 4.27) at the time of the study. The age of onset was 18.05 ± 3.05 years for the group with ADS while for the group with MDS, the age of onset was 14.95 ± 4.91 years. This indicates that those females who engaged in MDS became initiated at an earlier age. Also, in terms of education, it was shown that in patients with ADS, half of the individuals were intermediate, 25% were graduates, 15% were educated till high school, five per cent were till professional level, and five per cent till doctorate level. In comparison, in the MDS group, 40% were intermediates, 30% were graduation, 15% till high school, and 15% till professional level. In terms of marital status, the females belonging to both the clinical groups were mostly single (80% for group with ADS and 95% for group with MDS), but in the first group at least ten per cent

were married, five per cent were separated, and five per cent were divorcees; whereas in case of the second group, only the rest of five per cent were separated. A majority of individuals were students in both groups (40% for group with ADS and 35% for group with MDS) or freelancers (30% for group with ADS and 25% for group with MDS). Majority of individuals in both groups were Hindus (95% for first group and 85% for second group) and came from nuclear family setups (65% for first group and 80% for second group).

Interestingly, majority of females with ADS (60%) had it alone and only 40% had it with companion; whereas in case of females with MDS, maximum people (80%) had it with companion, while only 20% had it alone. This difference could be due to the possibility that most of the people who would engage in excessive intake of multiple substances would usually either share a joint or the substances in between themselves and would also reportedly prefer sharing the cost as that would mean some cost-cutting on expenditure. When the role of emotions as a trigger was explored, it was seen that they had it either when they were too happy (30% for both the clinical groups) or when they felt too overwhelmed (70% for group with ADS and 65% for group with MDS). For both the clinical groups, the finding showed that maximum number of individuals (65%) had been abstinent previously, whereas a lesser number (35%) of them had not. A majority, that is 70% of the individuals diagnosed with ADS did not have any significant past history of medical illness, however the majority

(85%) did have a significant past history of psychological disorders. Amongst the 20 respondents who were diagnosed with MDS, 90% of them did not have significant past history of medical illness, but the majority (70%) were found to have a significant past history of psychological disorders. Most of the people in both the groups had a significant family history of psychological illness (60% for group with ADS and 75% for group with MDS).

Table 1 indicates that both the substance groups (i.e., the groups with ADS and MDS) scored higher on the dimension of neuroticism in comparison to HCG and significantly lower on the domains of agreeableness and conscientiousness (a significant statistical difference was found in terms of these three personality factors, i.e., $p < 0.01$). However, there was no significant difference between the groups in terms of extraversion or openness to experience. When post hoc analysis was done, it was found that in terms of neuroticism scores, there was no significant difference between the groups with ADS and MDS ($p = 0.0576$) although the mean of neuroticism in the group with MDS was slightly higher than the group with ADS. A statistically significant difference was noted between the group with MDS and HCG ($p = 0.001$), and between the group with ADS and HCG ($p = 0.024$).

When comparing agreeableness scores across the groups, a statistically significant difference was noted between the groups with substance dependence and HCG, however not between the two groups with substance dependence. Post

Table 1: Comparison of NEO-FFI personality domains amongst the ADS, MDS, and HCG groups

Personality dimensions	Mean rank	df	Test statistic- Kruskal Wallis H test)	p value	Mann Whitney U test (ADS & MDS)	Mann Whitney U test (MDS & HCG)	Mann Whitney U test (ADS & HCG)
Neuroticism							
ADS	33.65	2	10.805	0.005**	0.576	0.024*	0.001**
MDS	37.55						
HCG	20.30						
Extraversion							
ADS	29.05	2	0.793	0.673	-	-	-
MDS	29.12						
HCG	33.32						
Openness							
ADS	31.95	2	2.833	0.243	-	-	-
MDS	34.22						
HCG	25.32						
Agreeableness							
ADS	26.85	2	16.733	<0.001**	0.444	<0.001**	0.006**
MDS	21.52						
Control	43.12						
Conscientiousness							
ADS	21.72	2	34.391	<0.001**	0.838	<0.001**	<0.001**
MDS	20.62						
Control	49.15						

NEO-FFI: NEO Five Factor Inventory, ADS: Alcohol dependence syndrome group, MDS: Multiple substance dependence syndrome group, HCG: Healthy comparative group

*Significant at 0.05 level

**Significant at 0.01 level

hoc analysis revealed that there was no significant difference between the group with ADS and the group with MDS ($p=0.444$) although the mean of agreeableness was slightly higher in the group with ADS than the group with MDS. A statistically significant difference was noted between the group with MDS and HCG ($p<0.001$), and between the group with ADS and HCG as well ($p=0.006$).

Lastly, when comparing the personality factor of conscientiousness across groups, post hoc analysis had revealed that there was no significant difference between the group with ADS and the group with MDS ($p=0.838$) although the mean of conscientiousness was slightly higher in the group with ADS than the group with MDS. A significant difference was noted between the group with MDS and HCG ($p<0.001$), and between the group with ADS and HCG too ($p<0.001$).

DISCUSSION

The findings that emerged from this study mainly indicated a significant difference in the personality dimensions of neuroticism, agreeableness, and conscientiousness between the groups with substance dependence and HCG. There was, however, no significant difference in the personality dimensions of extraversion and openness to experience. The results are consistent with previous researches which have indicated that patients having substance dependence in general scored higher on the dimension of neuroticism,[25-27] and lower on agreeableness and conscientiousness than HCG.[10,11] It may be hypothesised that persons who are higher on neuroticism are susceptible to experience more emotional instability, nervousness, tension, and thus, they may self-medicate in order to reduce the negative affective states.[28] Thus, the present finding that patients with multiple substance dependence score higher in neuroticism scores in comparison to their healthy counterparts is also in sync with findings by previous researchers[21] as it may indicate that they resort to multiple substances simultaneously to reduce or modulate the overbearing effect of their negative mood. It is interesting to note that while taking information on the sociodemographic clinical datasheet also during this study, most participants would subjectively explain how the substance would help them to reduce “their constant worries and lessen down the weight of negative emotions.” This may also elucidate as to why they found usage of substance as a relief and continued using the substance as it acted as a negative reinforcement from most of the tension they generally have. Another potent reason could be that the feeling of euphoria that many psychoactive substances induce, post their intake, may act as a positive reinforcement and thus they may continue intake behaviour.

Agreeableness is generally characterised by compassion, helpfulness, altruism, trust, modesty, and kindness, and whilst conscientiousness is perceived as a tendency to be well-organised, dependable, disciplined, reliable, and efficient. So, taken together they may represent the concept of putting extra effort to control or regulate self. The findings derived from the current study are in similar to the findings of a meta-analytic study by Bogg and Roberts[29] as well as other previous researchers,[30-33] although it was seen more robustly in alcohol dependence.[34]

Another angle from which this can be viewed is that due to low agreeableness these individuals tend to act in a cynical, uncooperative manner, which may lead them to have further difficulties in interpersonal domain, give rise to more stress, and a negative vicious cycle can continue. Low conscientiousness may be manifested as carelessness and lack of responsible behaviour which may make it even harder for them to yield and maintain control over substance intake despite of knowing of its long-term ill consequences. In a more Indian context of study by Dubey *et al.*,[35] a difference, if any, was explored between the personality traits of those who were abusing substance as compared with those who did not abuse substance by means of the NEO-Five Factor Inventory (NEO-FFI). The findings of the study that were derived were, that those who abused substances were significantly higher on neuroticism and extraversion as compared to their healthy counterparts. Meanwhile, the healthy counterparts had scored significantly higher on the domains of openness and conscientiousness showing they tend to be more creative and self-disciplined.

Thus, it may be hypothesised that patients with both ADS as well as MDS exhibited a higher level of negative affect, lower tendency to agree or show cooperation, and exhibit less self-discipline or difficulty in being well-organised and in adhering to rules than HCG which may be related to their substance dependence.

The surprising thing that emerged in this study is that, even though both the groups differed from HCG in terms of these three personality domains, namely neuroticism, agreeableness, and conscientiousness, there was no significant difference in any personality dimension between the groups themselves with substance dependence. Although this finding is uncommon, it is worth exploring further and understanding the implications of it. There is a possibility that most of these females who have either engaged into ADS or MDS, both already have a long-standing history of negative affect and difficulty in self-control/regulation along with having an unusual behavioural predisposition, which are not always in accordance with the standards of interpersonal interactions in society. All these factors mentioned above may be a commonality present in both the groups dependent on substances. Now it remains to be seen, if they already had difficulty in agreeableness and conscientiousness prior to substance use, or it developed more after getting dependent, which further reinforced substance intake as a relief from the negative affective states.

Another way it can be hypothesised is that the difference in intake choice cannot be solely attributed to personality, but it could also be due to other factors like specific metabolic deficits as biomarkers,[36] or metabolism of substance. Access to substance could also be another factor as it has been already observed that the group which had MDS, their average age and age of onset is much younger, their access may also vary depending on that. Personal liking/preference may also need to be looked into as something while considering their profile as some patients with MDS considered “the dry high to be more fun” whilst selecting the substance of choice.

Lastly, it cannot be overlooked, that although there was no statistically significant difference, but the mean scores of

agreeableness and conscientiousness were indeed lesser in the group with MDS than in group of females with ADS, which further suggests that the group with MDS is more maladjusted than the group with ADS.

Conclusion

Hence the findings derived from this study can help in understanding the possible role of these pertinent personality factors that can aid not only in early detection but also in devising specific tailor-made interventions differently according to different types of dependence. Although this study also has a few limitations, like the sample size was small, data was taken cross-sectionally, however it also has important implications such that, it indicates that healthy groups do differ significantly from groups with substance dependence in terms of certain personality dimensions. But at the same time, it also highlights the need to look beyond only personality factors to account for why there can be a difference in between groups who resort to different substances or sometimes multiple substances. Additionally, it brings to notice the importance of sociodemographic factors like role of emotions as triggers, type of companion when one takes a greater number of substances, and looks into the psyche of female addiction, which is usually quite difficult to access due to stigma. To summarise, if in future studies, a larger sample is taken along with incorporating a comparison between two genders, and also between groups with varied forms of substance dependence are studied, then the generalisability of those findings can be enhanced even further.

AUTHOR CONTRIBUTIONS

SC conceived the present research, researched literature, analysis, taken ethics committee clearance, engaged in patient recruitment, collected the data, calculated results, interpreted the results, and implemented the data analysis. TM was her supervisor who guided and helped her with implementation, guidance on the analysis, interpretation, and discussion of results.

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