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Personality Traits in the Patients of Depression with Suicidal Ideation

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ABSTRACT

Introduction: Suicide is a major global health concern. Personality traits significantly influence depression with suicidal ideation, highlighting the need to explore their role for targeted, personalized treatment approaches. **Objective:** To assess the mean score of personality traits using Big Five Inventory 10 (BFI-10), in patients of depressive disorder with suicidal ideation presenting at the Department of Psychiatry and Behavioral Sciences, Jinnah Post Graduate Medical Centre (JPMC), Karachi. **Study design:** Cross sectional study. **Study setting:** Study was conducted at the Department of Psychiatry and Behavioral Sciences, JPMC, Karachi. **Duration of study:** 11th September, 2024 to 31st January, 2025. **Subjects and methods:** The Data was prospectively collected from patients after taking a written consent. One hundred patients who met the diagnostic criteria were included. A brief history was taken and demographic information was recorded after taking written informed consent. Data was analyzed by using SPSS 23.0. Effect modifiers were controlled through stratification to see the effect of these on the outcome variable. Post stratification independent t-test and one way ANOVA test was applied taking p-value of ≤ 0.05 as significant. **Results:** A total of 100 patients who met the inclusion and exclusion criteria were included in this study. Mean Age was 32 ± 12 years. Mean scores of big Five personality traits were 5.94 ± 2.53 , 3.62 ± 1.57 , 4.02 ± 1.56 , 4.68 ± 1.56 , 4.96 ± 1.54 , for Neuroticism, Extraversion, conscientiousness, openness to experience and Agreeableness respectively. **Conclusion:** Personality traits may significantly influence suicide risk, emphasizing the need for close monitoring and regular follow-up in vulnerable patients.

INTRODUCTION

Approximately 280 million people are suffering from depression, across the globe¹. Prevalence of lifetime suicidal ideation among patients suffering from Major Depressive disorder is found to be 17.3%². Suicidal ideation is considered a significant precedent of suicidal attempt, which in turn is known to be a potent predictor of fatal suicide³. Apart from biology and social aspects, modification effects of personality traits on the risk of suicidal behavior have been suggested by Dervic⁴ and Tamas⁵. Owing to differences in personality profiles, individuals may behave differently when exposed to the specific risk factors^{4,5}.

McCrae and Costa suggested the five-factor personality model⁶. It conceptualizes personality as composition of various traits, including Agreeableness, Extraversion, Neuroticism, Conscientiousness and Openness. Cross-cultural validation of five factor personality model suggested that its wide application is possible⁷.

Among these five factors, Neuroticism is considered an independent risk factor⁸ as well as contributing risk

factor⁹ in suicide. High Neuroticism have been reported consistently with depression (mean score of 45.2 with standard deviation of 06)¹⁰ and suicide¹³. In contrast to high levels of Neuroticism, low levels of Extraversion have been linked to depression and suicidal ideation (Mean score of 30 with standard deviation of 6.3). Also, Extraversion has been negatively correlated with all parameters of suicidal behavior⁸. Conscientiousness substitute for self-discipline and active coping strategies in stressful situations, however, individuals with low levels of Conscientiousness lack the above-mentioned factors, leading to its association with increased suicidal behavior¹² among depressed patients. (Mean score of with standard deviation of 37.8 with standard deviation of 6.4)¹⁰. Low Agreeableness and high Openness to experience were found to be associated with increased suicidal ideation among young and middle-aged Korean adults¹².

A study conducted in Pakistan found the negative correlation of Neuroticism with suicidal ideation. However positive correlation of suicidal ideation was



found with high levels of Extraversion, Agreeableness, Conscientiousness and openness¹³.

The aim of this study is to determine the mean score of personality traits among mood disorder patients with suicidal ideation, presenting at a tertiary care hospital. To our best knowledge, there is significant meagerness of data regarding the topic of this study in our local milieu. Along with literature gap, the results available are quite contrasting as compared to the data provided by international studies. This leaves us an ample room to conduct our study to fill the literature gap and explore the cultural as well as regional trends in personality traits in our sample population. Apart from creating local data, if the results of this study are found significant, they will be shared for the betterment of our local community regarding prevention and management of suicidal behavior.

Operational Definitions

Depression: Depression was assessed using Patient Health Questionnaire-9 (PHQ-9), which is a valid and reliable instrument.

Depression was defined as a score of five or above on PHQ-9 scale. Severity of depression was also assessed using PHQ-9 scale, as follows,

- Mild Depression = 5-9
- Moderate Depression: 10-14
- Moderately severe Depression: 15-19
- Severe depression: 20-27

Personality trait: In this study, mean score of each personality trait was assessed by Big Five Inventory 10 (BFI-10), which is an open access instrument¹⁴. Although Urdu version is available but due to lack of validity and reliability, English version was used in my study that is valid¹⁴ as well as reliable¹⁴.

Suicidal Ideation: In this study, thoughts to inflict self-harming behavior, with or without the intent or plan, was considered as suicidal ideation.

Severity of suicidal ideation was assessed by using Modified Scale for Suicidal ideation (MSSI), by Ivan W. Miller, which is reliable and valid.¹⁵

In this study, severity of depression was classified as follows,

Low suicidal ideation: Any score equals or less than 8, on MSSI, was considered low suicidal ideation.

Mild to Moderate suicidal ideation: Any score of MSSI above 8 and less than 21 was considered mild to moderate suicidal ideation.

Severe suicidal ideation: Any score of MSSI equal to or greater than 21 was considered severe suicidal ideation.

SUBJECTS AND METHODS

Participants

A cross-sectional observational study design was applied to address the objective of this study. The sample size was calculated using World Health Organization (WHO) calculator, taking mean + Standard deviation 45.2 ± 6 of

Neuroticism personality trait¹⁰, with precision of 0.01 and at 95% Confidence interval. The desired sample size is 139, which is not possible due to low patient turn over so we will include 100 patients. Non probability convenience sampling method was used in this study. The sample population included patients presenting in outpatient department of Department of Psychiatry and Behavioral Sciences, after giving consent. Patients in active psychosis and those who cannot speak, hear or see, were excluded from this study.

Instruments

Demographic variables, including age, gender, religion, education, occupation, and marital status, family history of psychiatric illness and suicide, current substance use and attempts of self-harm or suicide, type of family, maternal deprivation and paternal deprivation were collected through a semi-structured proforma. Severity of Depression was assessed by Patient Health Questionnaire-9 (PHQ-9) and severity of suicidal ideation was assessed by using Modified Scale for Suicidal ideation (MSSI).

Mean scores of Big five Personality traits were assessed by Big five inventory, 10th version. (BF-10), including Openness to experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. It is a 10-item questionnaire and for each item, there is five-point rating sub-scale, including 01 for “strongly disagree” and 05 for “strongly agree”.

Two items are reserved for each personality trait, among whom one is positively polarized and the other one is negatively polarized. For Extraversion, item number 1 is negatively polarized and item number 6 is positively polarized. For Openness to experience, item number 10 is negatively polarized and item number 05 is positively polarized. For conscientiousness, item number 08 is negatively polarized and item number 03 is positively polarized. For Neuroticism, item number 04 is negatively polarized and item number 09 is positively polarized. For Agreeableness, item number 07 is negatively polarized and item number 02 is positively polarized. Negatively polarized items (1, 04, 07, 08 and 10) were recorded first and then a mean value is recorded from both positively and negatively polarized score for each trait. The range of value for each trait is 1 to 5.

RESULTS

A total of 100 patients presenting at the Department of Psychiatry and Behavioral Sciences, JPMC, Karachi who met the inclusion and exclusion criteria, were included in this study. The minimum age of the patient was 15 years while maximum age of the patients was 65 years, with mean age of 32 ± 12 years.

With regard to gender, there were more males 53 (53%) than females 47 (47 %).

Mean scores of big five personality traits were 5.94 ± 2.53 , 3.62 ± 1.57 , 4.02 ± 1.56 , 4.68 ± 1.56 , 4.96 ± 1.54 ,

for Neuroticism, Extraversion, conscientiousness, openness to experience and Agreeableness respectively.

Table 1

Descriptive Statistics

Variable	Mean \pm Standard Deviation (SD)	Minimum	Maximum
Agreeableness	4.96 \pm 1.54	2.0	9.0
Openness to experience	4.68 \pm 1.56	1.0	9.0
Conscientiousness	4.02 \pm 1.56	1.0	8.0
Extraversion	3.62 \pm 1.57	1.0	7.0
Neuroticism	5.94 \pm 2.53	1.0	9.0
Age (years)	32.84	15	65

For marital status, 23 (23%), 08 (08%), 50 (50%), 04 (04%), 03 (3.0%), 07 (07%), 05 (05%) were single, engaged, married, separated, divorced, widowed and remarried respectively.

Among 100 patients 21 (23.7%) were pre-literate, 22 (23%) had primary education, 28 (28%) were matriculate, 19 (19%) had studied till intermediate, 07 (07%) had graduation degree and 03 (03%) had post graduate qualification.

Frequency distribution of occupational status showed that out of 100 patients, 01 (1%), 02 (2.9%), 29 (26.6%), 33 (30.9%), 05 (5.8%) and 29 (30.9%) were student, student with part time job, unemployed, employed, retired and home maker respectively.

In our results, 48 (48%) of patients had history of psychiatric illness in family while 52 (52%) did not have family history of psychiatric illness among family members, as presented in Figure 07.

Frequency distribution of family history of substance use showed that in family of 42 (42%) there was history of substance use and 58 (58%) of the patients did not have any family history of substance use. Out of 100 patients, 18 (18%) patients had an attempt of suicide during lifetime while 82 (82%) did not have any attempt of self-harm.

Also 19 (19%) patients had a history of childhood abuse while 81 (81%) did not report any childhood abuse.

Results regarding severity of suicidal ideation showed that out of 100 patients, 54 patients had low suicidal ideation, 45 had mild-moderate level of suicidal ideation and 1 patient had severe suicidal ideation.

Frequency distribution of severity of Depression showed that out of 100 patients, 12 patients had mild depression, 42 patients had moderate level of depression, 29 patients had moderately severe depression and 17 patients scored for severe depression.

Table 2

Demographic Variables

Demographic variables	n	%
Gender		
Male	53	53%
Female	47	47%
Marital status		
Single	23	23%

	Engaged	8	8%
	Married	50	50%
	Separated	4	4%
	Divorced	3	3%
	Widowed	7	7%
	Remarried	5	5%
Education	Pre-literate	21	21%
	Primary	22	22%
	Matric	28	28%
	Intermediate	19	19%
	Graduation	07	07%
	Post-graduation	03	03%
	Student	1	1%
Occupation	Student with part time job	2	2%
	Unemployed	29	29%
	Employed	33	33%
	Retired	5	5%
	Home maker	29	29%
Family history of psychiatric illness	Yes	48	48%
	No	52	52%
Family history of substance use	Yes	48	48%
	No	52	52%
Attempt of self-harm	Yes	18	18%
	No	82	82%
History of childhood abuse	Yes	19	19%
	No	81	81%
Severity of Depression	Mild	12	12%
	Moderate	42	42%
	Moderately severe	29	29%
Severity of Suicidal ideation according to MSSSI	Severe	17	17%
	Low	54	54%
	Mild to moderate	45	45%
	Severe	1	1%

Stratification of results were done for age, gender, marital status, educational status, family history of psychiatric illness, history of childhood abuse, previous attempts of self-harm by patient, severity of suicidal ideation and severity of depression.

There was statistically significant difference (0.009) among occupational status and Agreeableness trait of big five personality traits. Student, student with part time job, employed and home makers showed higher mean scores for agreeableness, 06, 6.5, 5 and 5 respectively, while those who were unemployed and retired showed fewer mean scores for agreeableness that is 4.58 and 4.40 respectively.

Apart from that, results were statistically significant for stratification of Neuroticism and severity of suicidal ideation. The patients who had low suicidal ideation scored mean score of 5.22 for neuroticism. Those patients whose suicidal ideation was of mild to moderate level, mean scores were 6.82 and those with severe level of suicidal ideation, mean scores of neuroticism were 05.

Figure 1

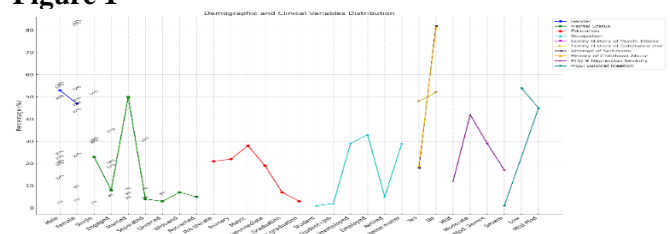


Table 3

Stratification of Severity of Suicidal Ideation to Determine Correlation of Gender with Big Five Personality Traits

Variables		Mean	Std. Deviation	Std. Error	P-value/ Sig.
Neuroticism	Low	5.22	2.61	0.35	0.006
	Mild to Moderate	6.82	2.18	0.32	
	Severe	5.00	0.0	0.0	
Extraversion	Low	3.74	1.53	0.20	0.44
	Mild to Moderate	3.44	1.61	0.24	
	Severe	5.00	0.0	0.0	
Conscientiousness	Low	4.05	1.32	0.18	0.60
	Mild to Moderate	4.00	1.41	0.21	
	Severe	3.00	0.0	0.0	
Openness to experience	Low	4.55	1.66	0.22	0.69
	Mild to Moderate	4.822	1.45	0.21	
	Severe	5.00	0.0	0.0	
Agreeableness	Low	4.67	1.49	0.20	0.062
	Mild to Moderate	5.26	1.52	0.23	
	Severe	7.00	0.0	0.0	

DISCUSSION

Suicide is a major public health issue accounting for over one million deaths per year making it the tenth leading cause of death worldwide. Known risk factors include age, gender, presence of psychiatric disorders, and other sociodemographic characteristics such as unemployment. An increasing body of evidence suggests an association between certain personality factors and suicidal behaviors. Past research applied a variety of different concepts of personality complicating definite conclusions about the influence of personality traits on the suicide. The five-factor model of personality is one of the most comprehensive and best established models to assess personality.

Our study included a total of 100 patients who met the inclusion and exclusion criteria. Mean age in our study was 32 ± 12 years. Mean scores of big five personality traits were 5.94 ± 2.53 , 3.62 ± 1.57 , 4.02 ± 1.56 , 4.68 ± 1.56 , 4.96 ± 1.54 , for Neuroticism, Extraversion, Conscientiousness, Openness to experience and Agreeableness respectively, as presented in table 01.

Our study also examined the differences in personality traits across varying levels of severity of suicidal ideation. The findings revealed a significant difference in Neuroticism scores among the severity groups of suicidal ideation ($p=0.006$) with individuals in the Mild to Moderate category of suicidal ideation, exhibiting the highest scores, compared to the Low and Severe groups. Conversely, no significant differences were observed for Extraversion ($p=0.44$) Conscientiousness ($p=0.60$), and Openness to Experience ($p=0.69$) indicating that these traits remain consistent across severity levels. Interestingly, Agreeableness ($p=0.062$) approached

significance, with a trend suggesting higher scores in more severe cases, although this finding requires further investigation. The absence of variability (standard deviation = 0) in the severe group of suicidal ideation, across traits raises questions about sample size, highlighting a need for cautious interpretation.

Our study also examined the differences in personality traits across varying levels of severity of Depression. For Neuroticism, there was a clear upward trend in mean scores from Mild (2.50) to the Severe group (7.12). However, this difference was not statistically significant ($p=0.20$). Similarly, no significant differences were observed for Extraversion ($p=0.62$), as mean scores remained relatively consistent across severity levels, Conscientiousness ($p=0.33$) also showed no significant variation. Openness to Experience scores exhibited a slight increase across severity levels but were not statistically significant ($p=0.73$). Finally, Agreeableness showed an upward trend from the Mild (4.00) to the Severe (5.59) group, though this difference also did not reach statistical significance ($p=0.33$). These results suggest that while trends are evident for some traits, statistical confirmation of these patterns would require a larger sample size and further investigation.

In another study, a total of 6022 subjects were included. Agreeableness (odds ratio (OR) [95% confidential intervals (CI)]=0.79 [0.64–0.98]) was negatively associated with suicidal ideation, whereas neuroticism (1.27 [1.05–1.54]) and openness (1.36 [1.11–1.67]) were positively associated with suicidal ideation among young adults. Openness (1.25 [1.10–1.43]) had a positive association, and conscientiousness (0.86 [0.75–0.98]) had a negative association with suicidal ideation among the middle-aged group. Neuroticism is the only influencing factor for suicidal attempts among the young adult (1.88 [1.24–2.86]) and older (1.65 [1.24–2.20]) groups.¹⁶

Interestingly, high neuroticism was associated with suicidal attempts in young adults and the older groups, whereas high openness had an association with suicidal attempts among the middle-aged population in our study. On the other hand, the combination of high neuroticism and high openness as shown in the young adults has been consistently reported concerning suicide and self-injurious behaviors. High neuroticism represents anxious, dysphoric, and depressed traits, and it has been consistently reported to be associated with depression and suicide. In addition, a recent study revealed that high neuroticism can contribute to suicide by affecting on the help-seeking behavior. Higher openness in suicidal subjects than in controls is a commonly reported finding. In some cases, subjects with high openness may have a curiosity about novel ideas and intellectual stimuli. However, in some cases, high openness might be associated with thinking that is too odd, which often leads to schizotypal content or fantasies. Another study

has suggested that high openness might be associated with obsessive-compulsive disorder, which suggests that high openness would reflect an association with fantasy. A recent systematic review have reported those differences in the personality traits by age groups, particularly focusing on the old age.¹⁷⁻²⁴

Low conscientiousness was associated with suicidal ideation among the young adults group. Because conscientiousness represents self-discipline and active coping skills for stressful situations, appropriate conscientiousness leads to adaption to social rules and personal responsibility. Because individuals with low conscientiousness would be incompetent to cope with stressful event, low conscientiousness could also be associated with suicide. Several previous studies have reported that low conscientiousness was associated with suicide. However, maladaptively high conscientiousness could be associated with self-oriented perfectionism, which in turn could lead to setting excessively high goals and striving to achieve them. Many studies have suggested that perfectionism is closely associated with suicide. It is also noteworthy that conscientiousness had a positive association with suicidal attempts in the older age group, although it was not statistically significant ($P=.06$). We speculate that there would be specific groups or situations in which conscientiousness is positively or inversely associated with suicidal behaviors.¹⁷⁻²⁴

Limitations

There are some possible limitations in this study. One of them is under reporting or over reporting by the subjects enrolled in this study. Although possible correlation between personality traits and depression with suicidal ideations is suggested by this study, but this study is a cross sectional study and does not show causal

relationship between the variables. A smaller sample size further compounds these challenges by reducing the statistical power of the analysis and limiting the generalizability of findings. These limitations necessitate cautious interpretation of results and highlight the need for larger, longitudinal studies to validate findings and establish causal inferences.

CONCLUSION

Suicide and self-harm are major public health concerns worldwide. Self-harm presentations in primary care and hospital settings allow the opportunity for intervention. Accurately identifying, appropriately assessing and providing evidence-based treatment to manage self-harm are key public health priorities. In conclusion, this study highlights the significant role of specific personality traits in patients with depressive disorder who exhibit suicidal ideation. Findings indicate that certain traits, such as high levels of neuroticism, low levels of conscientiousness, are more prevalent among these individuals. These traits may exacerbate symptoms of depression, leading to an increased risk of suicidal thoughts.

Understanding the interplay between personality traits and depressive symptoms provides valuable insights for mental health professionals in tailoring interventions and therapeutic approaches. Identifying high-risk personality profiles could facilitate early intervention, offering targeted support to reduce the severity of depressive episodes and mitigate the risk of suicide. Future research should focus on exploring the underlying mechanisms linking personality traits and suicide, as well as the effectiveness of intervention strategies aimed at modifying maladaptive traits in reducing suicidal ideation among patients with depressive disorders.

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