Comparison of Factors Affecting Clinical Performance and Choice of Specialty Among Medical Students

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ABSTRACT

Objective: To determine the relationship between various personality traits affecting clinical performance and choice of specialty among medical students.

Study Design: Cross sectional study.

Place and Duration of Study: Al-Nafees Medical College, Islamabad Pakistan, from May 2022 to Jun 2022.

Methodology: The present study was conducted among 1st, 4th, and final year medical students during academic session 2022. The total duration of the study was 8 weeks and 287 in-campus students were selected with the help of a designed questionnaire. Data was statistically analyzed in SPSS v25.

Results: This study included 300 people, however only 287 answered (95.67%). The majority of the graduating students opt surgery as their future specialty i.e. 29.7%. Although the study indicated that performance declines over time as in 1st year, we had 85(88.5%) out of 96 respondents that scored above 80% while 4(4%) out of 97 in final year scored above 80%. Extraordinary students had greater agreeableness, conscientiousness, and extraversion traits among them. Extraverted medical students sleep longer, whereas amiable and open-minded students sleep less. As the clinical year of clerkship advances, agreeableness trait grows while neurotic trait diminishes, especially among high-achieving students.

Conclusion: According to the findings of this research, some characteristics of personality are linked to the academic achievement of medical students. Personality traits and specialty choice can improve career counselling of medical students. This study recommends that personality traits, in addition to cognitive considerations, should be considered by medical educators when evaluating the potential academic and clinical success of their students.

Keywords: Choice of specialties, medical students, Personality traits.

INTRODUCTION

Each student has a distinct learning style, and they all function best in personalized environments. Learning style is how people approach learning.[1] Cognitive talents (such as intelligence and critical thinking) are used to measure academic and clinical success in medical school. While MCAT scores and undergraduate GPA indicate pre-clinical exam success, their association with clinical performance in medical school is less obvious.[2,3] Non-cognitive factors, including as personality qualities, may be utilized to predict student achievement during clinical years, when they engage more with patients and healthcare professionals.[2]

The link between personality and academic and clinical success has advanced since one of the first reviews.[1] Many personality assessment instruments such as NEO Personality Inventory, the California Psychological Inventory, the Eysenck Personality Inventory, the 16 personality factor (16PF) Questionnaire, the Myers-Briggs Type Indicator and the Jefferson Scale of Empathy have been used, but Big-Five has emerged as a solid, repeatable, and scientifically valid foundation for articulating the connection between personality and behavior.[1,4]

The Big Five model of personality includes openness, extraversion, neuroticism, agreeableness, and conscientiousness. Openness displays innovation, curiosity, and fresh notion openness. Extraversion is an energetic and vibrant social style. Neuroticism relates to sadness and anxiety. Agreeableness promotes warmth, trust, and teamwork. Conscientiousness involves thoroughness, diligence, and self-contro.[1,2] Personality qualities are strongly linked to great academic and professional achievement, both conceptually and numerically.[1]

Personality and academic achievement in medical students are studied differently. Several studies suggest that diligent people excel in therapeutic

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settings,[5] even the most dedicated clinical students suffer, according to research [6]. Extraversion was found to be a strong predictor of clinical clerkship grades in another investigation. Conscientiousness, extraversion, and openness were strong predictors of clinical GPA at six Flemish medical schools in Belgium.[2]

This study focuses on the relationship between the Big Five personality traits and medical student grades to define the relationship more clearly between personality and academic achievement in medical school. The aim of the current study was to identify different personality traits and how they relate to students' clinical performance and sleeping patterns to change teaching and learning strategies and help students achieve exceptional academic results.

METHODOLOGY

This was a cross sectional study, done in Al-Nafees Medical College over the period of 8 weeks from 1st May 2022 to 30th June 2022. Sample Size of 300 (N) students that were enrolled in the session at the time of data collection was considered as participants taken by convenient sampling technique, all the students that were enrolled in 1st, 4th and final year were selected i.e. 100 students each class, 300 in total although at the time of data collection 13 students were absent from their respective class. So, the response rate was 95.67% i.e. 287 students out of 300 were enrolled in current study.

Inclusion Criteria: Both female and male students of 19 to 24 years, from 1st, 4th, and final year MBBS in different clinical specialty clerkships were included.

Exclusion Criteria: All students who did not give written consent and were absent or detained in other class were excluded from the study.

A questionnaire was designed in which a consent form for enrollment of participants, a section of personal profile along with the preference of choice of specialty and a section of personality traits was noted. This designed questionnaire with closed ended questions was filled by medical students under supervision of authors during college timings after getting the approval from Institutional ethical review board (IERB) of Al-Nafees Medical College & Hospital, Islamabad (letter no. F.2/IUIC-ANMC/EC-148/2017). The identity of each participant was kept anonymous throughout the study. After data collection the parameters i.e. gender, academic year, academic performance, sleeping hours, choice of

specialty and personality traits, were entered and the data was analyzed in statistical package of social science (SPSS) version 25 and was used to statistically analyze the frequencies in terms of percentages and to find any association chi-square test was applied.

RESULTS

A total of 300 participants were selected for our study out of which only 287 participants responded showing 95.67% response rate. Out of 287 respondents 96 (33.4%), 94 (32.8%) and 97 (33.8%) participants were from 1st Year, 4th year and final year MBBS students, respectively from different clinical specialty clerkships. We had more female respondents as compared to males i.e., 153(53.3%) and 134(46.7%) respectively, in which 54(18.8%), 28(9.8%) and 71(24.7%) females were from 1st year, 4th year and final year, respectively while males from 1st year, 4th year and final year were 42(14.6%), 66(23%) and 26(9.1%), respectively.

There were 140(48.8%) hostelite students while 147(51.2%) day scholar students. Our study showed that the performance decreases by time due to many factors like stress and difficult studies initially in 1st year we had 85(88.5%) out of 96 respondents that scored above 80% while only 8(8.5%) out of 94 in 4th year and 4(4%) out of 97 in final year scored above 80% and also showed that we had no student in 1st year that scored below 70% in 1st year while 16 (17%) out of 94 in 4th year and 37(38%) out of 97 in final year scored below 70% as shown in Table-I.

Table-I: Descriptive Analysis of Various Factors in Terms of Different Clinical Specialty Clerkships and Factors. (n=287)

Academic Level	1st Year	4th Year	Final	*p*-value
Total Students	96	94	97	
Academic Performance				
Below Average	0(0%)	21(7.32%)	42(14.6%)	
Average	11(3.8%)	59(20.56%)	40(13.9%)	<0.000
Extra-Ordinary	85(29.6%)	14(4.88%)	15(5.23%)	
Gender				
Male	42(14.6%)	66(23%)	26(9.1%)	<0.000
Female	54(18.8%)	28(9.8%)	71(24.7%)	
Sleeping Hours				
1-4	3(1%)	4(1.39%)	6(2.1%)	
5-8	81(28.2%)	62(21.6%)	76(26.5%)	0.020
9+	12(4.2%)	28(9.8%)	15(5.2%)	
Sleeping Hours	1-4	5-8	9+	p-value
Academic Performance				
Below Average	2(0.7%)	37(12.89%)	24(8.4%)	
Average	5(1.7%)	89(31%)	16(5.6%)	0.001
Extra-Ordinary	6(2.1%)	93(32.4%)	15(5.2%)	
Gender				
Male	7(2.44%)	102(35.5%)	25(8.7%)	0.860
Female	6(2.1%)	117(40.8%)	30(10.5%)	

Majority of our graduating students opt surgery as their future specialty i.e. 85 (29.6%) while 45 (15.7%)

of our population opt for Medicine and Emergency medicine each as their choice of specialty while 27(9.4%) of students chooses Gynecology / Obstetrics and Pediatrics each as their future specialty, although minor chunk of graduating students opted for EYE, ENT, Radiology and Public Health i.e. 18(6.3%), 18(6.3%), 13(4.5%), 9(3.1%) respectively. Factors that lead to different choices of specialty are sleeping hours, academic performance and individual's own personality traits that has been discussed below.

Our results show that almost no major difference of personality traits among males and females although the most personality trait was noted among selected participants was Openness then Agreeableness although males have comparatively less conscientiousness and agreeableness trait while females have less neuroticism and extraversion trait. We also noticed that as the academic year increases neuroticism and agreeableness trait decreases and the trait that is more among students of all academic years from different clerkship specialty was Openness.

Our study shows that students with good sleeping hours i.e. 5-8 hours perform well in studies while the male students that sleep more than 9 hours had poor clinical performance however, female students that sleep more than 9 hours shows opposite result that they perform well clinically, as shown in Table-II.

Table-II: Association Between Sleeping Hours and Clinical Performance According to Gender (n=287)

		Male	Female	*p*-value
Total Participants		134	153	
1-4	Below Average	0	2 (0.7%)	0.154
	Average	4 (1.4%)	1 (0.3%)	
	Extra-Ordinary	3 (1%)	3 (1%)	
5-8	Below Average	22 (7.7%)	15 (5.2%)	0.116
	Average	43 (15%)	46 (16%)	
	Extra-Ordinary	37 (12.9%)	56 (19.5%)	
9+	Below Average	12 (4.2%)	12 (4.2%)	0.050
	Average	10 (3.5%)	6 (2.1%)	
	Extra-Ordinary	3 (1%)	12 (4.2%)	

In Table-III, we notice that Neuroticism is comparatively less trait among students getting low grades than students getting grades above 70% which is negative impact. The students with extra-ordinary grades were having more agreeableness, conscientiousness and extraversion traits among them.

In Table-IV, it is shown that the medical students having extraversion trait were more prone to have longer sleeping hours while the medical students sleep less possess more agreeableness and openness trait

among them Although the students having neurotic trait had good sleeping hours.

Table-III: Showing Levels of Personality Traits Among Students with Different Scores Category of Clerkships (n=287)

Grades n(%)	Extraversion	Agree-ableness	Conscientious-ness	Neurotic-ism	Open-ness
Below Average 63(22%)	17.98	21.78	18.46	16.14	24.70
Average 110(38.3%)	18.36	21.48	18.02	18.73	24.52
Extra-Ordinary 114(39.7%)	19.28	23.52	21.25	19.22	24.65

Table-IV: Comparison of Personality Traits with Sleeping Hours Among Medical Students (n=287)

Sleeping hours n(%)	Extraversion	Agreeable-ness	Conscientious-ness	Neurotic-ism	Openness
1-4 13(4.5%)	16.92	26	20.85	15.92	27.69
5-8 219(76.3%)	18.58	22.40	19.66	18.72	24.52
9+ 55(19.2%)	19.33	21.33	18.02	17.47	24.25

In Table-V, it is shown that as the clinical year progresses the agreeableness trait increases and neuroticism trait decreases especially among students with extra-ordinary grades although the agreeableness trait initially decreases till 4th year but increases among students of final year. Although the Openness trait was more among all students except students of final year with good scores.

Table-V: Association of Personality Traits in Different Clinical Years of Clerkships with Performance (n=287)

		Extra-version	Agree-ableness	Conscientious-ness	Neurotic-ism	Open-ness
1st Year	Below Average 0	0	0	0	0	0
	Average 11(11.5%)	25.18	25	27.55	23.64	26.09
	Extra-Ordinary 85(88.5%)	19.42	23	21.65	20.16	23.78
4th Year	Below Average 21(22.3%)	19.19	22	18	15.86	26.29
	Average 59(62.8%)	16.71	20.97	15.76	19.68	23.78
	Extra-Ordinary 14(14.9%)	17.93	28.5	21	17.29	29.64
Final Year	Below Average 42(43.3%)	17.38	21.67	18.69	16.29	23.9
	Average 40(41.2%)	18.93	21.28	18.73	15.98	25.17
	Extra-Ordinary 15(15.5%)	19.73	21.80	19.2	15.67	24.93

DISCUSSION

Personality studies may be highly helpful in advising medical students on the specialty that would be best suited to their personalities because medicine is a broad discipline with unique expertise.[7] An essential educational technique that can assist in

curriculum modification is the identification of personality traits.[8] Studies in this area may also contribute to the development of a stimulating atmosphere that improves students' capacity for learning. Numerous academic investigations have sought to create personality profiles of medical students at various stages of their study.[1,9-11] To the best of our knowledge, this study is the first of its type to attempt to evaluate the personality qualities of medical students and determine whether such attributes are associated with academic success in Pakistan.

In our study male and female both scored higher in "Openness trait" and scored lowest in "Conscientiousness trait" while a study conducted among medical students of Saudi Arabia showed contrary results that both males and females scored higher in "Conscientiousness trait" 1 and another study conducted by Lydon S. et al.[12] also reported the contrary results to our study that females scored higher in "agreeableness and conscientiousness trait.

Present study stated that Openness, Agreeableness and Conscientiousness traits are higher among medical students with good academic grades similar findings were also reported by a study conducted in 24 medical schools of USA by Sobowale et al. which states that conscientiousness trait is the strongest predictor of clinical success in medical school.[2] Likewise, a similar result was concluded by a study conducted in medical school of Saudi Arabia by Al-Naim et al.[1] and this significant association of conscientiousness trait and good academic performance also reported in other studies conducted by Harria D. et al., De Raad et al., and Margrain et al.[8,13,14] While an author Ibrahim Ns,[15] stated that Conscientiousness trait is most persistent personality trait that is highly associated with academic performance. These findings were supported by a previously prospective study among Flemish medical students in Belgium by Lievens et al.[16] and in a systemic review by Ferguson et al.[17] A recent study conducted in 2012 by Haight et al., showed that conscientiousness trait was associated with multiple aspects of clinical acumen, including history taking, physical exam, patient rapport and team rapport. Although in a research by Ferguson and colleagues including 220 students from a single medical school, it was discovered that high conscientiousness was inversely correlated with clinical knowledge and indirectly with clinical abilities.[13]

Our study showed that Neuroticism is less among students with below average academic grades which is contrary to a study conducted in USA which stated that Neuroticism is strongly associated with worse performance as neuroticism trait is inversely associated with academic grades.[2] Medical students who are neurotic may have a temperament that is more prone to anxiety, and they may also be more prone to despair and insecurity.[18] They may also be more susceptible to stress because of their inability to effectively cope with it.[17-18] This vulnerability can be made much worse by the high-stakes performance circumstances that are now taking place.

CONCLUSION

According to the findings of this research, some characteristics of personality are linked to the academic achievement of medical students, most notably conscientiousness, are essential for improved academic performance. We are of the opinion that personality traits, in addition to cognitive considerations, should be taken into account by medical educators when evaluating the potential academic and clinical success of their students.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

HK & RS: Data acquisition, data analysis, critical review, approval of the final version to be published.

HS & DA: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

DA & MA: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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