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ORIGINAL ARTICLE:

Narcissistic Traits and Their Association with Career Motivations Among Medical Students In Sialkot, Pakistan: A Cross-Sectional Study

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ABSTRACT

OBJECTIVE
To evaluate medical students' narcissistic trait scores and their relationship with career motivations.
STUDY DESIGN
Cross-sectional study
PLACE AND DURATION OF STUDY
Four medical colleges in Sialkot, Pakistan from April to October 2025
METHOD
Using stratified sampling, 370 undergraduate medical students were recruited. Data were collected using a structured questionnaire comprising demographic information, the Narcissistic Personality Inventory-16 (NPI-16), and a 17-item career motivation questionnaire. Data were analyzed using SPSS version 27 with non-parametric tests; Bonferroni correction was applied to control for multiple comparisons.
RESULTS
Among the 370 participants, 49.2% were male and 50.8% were female, with a median age of 22 years. Overall, 70.5% of participants had NPI-16 scores within the normal range, 25.7% had borderline scores, and 3.8% had scores above the defined threshold for high narcissistic traits. The median NPI-16 score was 3. Male students had higher median NPI-16 scores than female students. After Bonferroni correction, only the association between NPI-16 scores and "prestigious social standing" remained statistically significant (rs = 0.168, p = .001), although the correlation was weak. The other three associations (professional status, self-employment/independence, enjoyment of professional activities) were significant only before correction and are exploratory findings.
CONCLUSION
Narcissistic traits were generally low, with male students scoring modestly higher than female students. After correction for multiple comparisons, only the desire for prestigious social standing remained weakly associated with higher NPI-16 scores; no significant associations were observed with motivations related to helping others or interest in science.

KEYWORDS
Altruism, Empathy, Medical Students, Motivations, Narcissism

INTRODUCTION

Narcissism is a complex personality construct that, when pronounced and associated with clinically significant impairment, may occur as part of narcissistic personality disorder (NPD), which is characterized by features such as grandiosity, a need for admiration, and impaired empathy.[1] The 16-

item Narcissistic Personality Inventory (NPI-16) is a brief measure of narcissistic traits and should not be interpreted as a diagnostic instrument for NPD. NPD is a clinical diagnosis, which must be evaluated using known diagnostic criteria. Clinical diagnosis of NPD is guided by the criteria given in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). [2]

Narcissistic traits can include adaptive and maladaptive characteristics. Adaptive features may include ambition, self-confidence, and leadership orientation, whereas maladaptive features may include excessive self-focus, entitlement, and a need for recognition.[3] Some studies have suggested that narcissistic traits among medical students may be associated with academic ambition and achievement.[4] A study in Central Park Medical College revealed that 29.33% of the students participated in the study had narcissistic characteristics with more students in the junior MBBS students.[5] Personal preferences, expected lifestyle, specialty qualities, and financial factors have been also recognized as factors influencing medical graduates' career decisions, which may be different in educational, cultural, and socioeconomic environments.[6-8]

The purpose of this study was to evaluate the narcissistic traits of medical students and to analyze their relationship with career motivations. In particular, the study investigated the association of individual motivations related to professional status, security, career characteristics, patient care, personal skills and interest in science with scores on the NPI-16.

METHOD

The present cross-sectional study was conducted after obtaining approval from the Institutional Review Board (IRB) of Islam Medical and Dental College, Sialkot, Pakistan (ref. 900/IMC/ERC/000103) from April to October 2025 among MBBS students from four medical colleges in Sialkot, Pakistan: Islam Medical College, Khawaja Muhammad Safdar Medical College, Sialkot Medical College and Sahara Medical College. The study was conducted among medical students from all five undergraduate academic years in accordance with the Declaration of Helsinki (2013 revision). Written informed consent was obtained from all participants. Questionnaires were anonymous, and consent forms were collected separately to ensure confidentiality.

Stratified sampling technique was used with an academic year as the stratification variable. Cochran's formula for estimating a proportion was used to calculate the required sample size at 95% confidence level (Z = 1.96), with an expected proportion of 50% and a margin of error of 5%. The initial sample size was adjusted for the finite population correction, given an estimated population of 2,500 undergraduate medical students in the participating medical colleges. The minimum sample size that resulted was about 333 students. The number of students allocated to each academic year was equal (74 students each) to ensure adequate representation across all academic years, resulting in a final target sample of 370 students. This allocation was chosen to ensure a similar distribution of the population over the academic years as well as to allow for comparison of NPI-16 scores and career motivations by academic year.

All students from the MBBS program aged 18 years or above were eligible to participate. Those under 18 years or with a diagnosed psychological illness were excluded. Eligible students available during data collection were invited to participate, with participation being voluntary. As the numbers approached or declining participation were not systematically recorded, a response rate could not be calculated. A total

of 370 students were included.

Data Collection

Following permission from the four medical colleges, the printed, self-administered questionnaires were distributed during college visits in each class and completed for data collection. All questionnaires were in English; no translation was required. The questionnaire consisted of three parts: (1) demographic information (2) narcissistic traits assessment employing the Narcissistic Personality Inventory-16 (NPI-16)[9] and (3) career decisions motivation evaluation with a 17-item Career Motivation Questionnaire adapted from Crossley and Mubarik.[10] The latter examined six thematic areas, namely status and security, nature of occupation, career opportunities, patient care and working with people, use of personal skills, and interest in science. These categories were based on the three original motivational dimensions proposed by Vaglum et al. (people-oriented, status/security-oriented and natural-science-oriented),[11] which were subsequently expanded by Crossley and Mubarik.

The primary variables were NPI-16 scores and individual career motivation factors. Associations between narcissistic traits and career motivations were assessed at the individual-item level.

Consistent with Crossley and Mubarik, career-motivation items were analysed individually rather than as composite scores since the original Vaglum indices reported insufficient internal consistency in the source study.[10] In the present sample, the 17-item scale showed acceptable internal consistency, but items were retained at the individual level to follow the source study's methodological approach. The six thematic categories were maintained for conceptual grouping and interpretation but were not considered as validated composite dimensions. Accordingly, the analyses examined associations between NPI-16 scores and individual career-motivation items.
Internal consistency was acceptable for the NPI-16 (Cronbach's $\alpha = 0.731$) and for the 17-item career-motivation scale (Cronbach's $\alpha = 0.787$).

For descriptive purposes, NPI-16 scores were categorised into three groups following a previously published categorisation: normal (<5), borderline (5–9), and narcissistic (>9).[12] These categories were used solely to describe the distribution of NPI-16 scores and were not interpreted as diagnostic thresholds for narcissistic personality disorder.

Statistical Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS), version 27. NPI-16 scores were not normally distributed (Shapiro–Wilk $p < 0.001$), thus non-parametric tests were used. Spearman's rank-order correlation was used to assess associations between NPI-16 scores and individual career-motivation items. To compare the scores of two groups, the Mann–Whitney U test was used, and for multiple groups, the Kruskal–Wallis test was used. A Jonckheere–Terpstra test was employed to test the trend of NPI-16 scores over ordered academic years of the MBBS program. The significance was considered at $p<0.05$.

Multiple comparisons potentially gave rise to type I error, as 17 individual items of career motivation were investigated in relation to NPI-16 scores. Thus, a Bonferroni correction was applied, (adjusted $\alpha = .0029$, 0.05/17). Results were reported both before and after correction, and only associations surviving

correction were interpreted as significant, and associations significant only before correction were labelled as exploratory.

RESULTS

A total of 370 medical students participated, consisting of 182 males (49.2%) and 188 females (50.8%) whose median age was 22 years (IQR 20-23; range 18-30). Equal numbers of students were recruited from each of the five academic years (74 per year, 20% each). Previous knowledge of the concept of narcissism was reported by 322 students (87.0%), while the remaining 48 (13.0%) reported no prior knowledge. Reasons for non-participation among eligible students were not recorded.

The Narcissistic Personality Inventory (NPI-16) scores were non-normally distributed, with a median score of 3 (IQR = 1-5; range 0-15). Based on the descriptive categories applied in an earlier study, 261 students (70.5%) scored in the normal range (<5), 95 (25.7%) in the borderline range (5-9), and 14 (3.8%) above 9. These categories are descriptive only and are not diagnostic thresholds.

Table 2 shows Spearman's correlations between NPI-16 scores and individual career-motivation items. Spearman's rank-order correlation showed no statistically significant association between NPI-16 scores and overall career choices motivation mean scores ($r_s = -0.034$, $p = .514$). Before Bonferroni adjustment, weak positive correlations were found for four individual items: high professional status, prestigious social standing, self-employment/independence, and enjoyment of interacting in professional settings. After Bonferroni correction for 17 comparisons (adjusted $\alpha = .0029$), only the association with prestigious social standing remained statistically significant ($p = .001$). However, the other three did not survive correction and were reported as exploratory. NPI-16 scores were not significantly associated with motivations related to helping others or general interest in science. The complete item-level results for all 17 items are shown in Table 2.

Table 2
Associations Between NPI-16 Scores and Individual Career-Motivation Items.

Career Choices Motivation	NPI-16 scores		
	N	r_s	p-value
Career choices motivation mean score	370	-0.034	0.514
Dimension 1: status and security			
Medicine offers high professional status	370	0.147	0.005
Offers prestigious social standing	370	**0.168**	0.001
Provides a secure future	370	0.066	0.208
Offers a high income	370	0.089	0.088
Dimension 2: nature of occupation			
Prefer a job with regular working hours	370	-0.013	0.799
Value having a responsible job	370	0.011	0.836
Self-employment and independence	370	0.115	0.026
Dimension 3: career opportunities			
Offers diverse opportunities	370	-0.042	0.423
Find medical career interesting	370	-0.093	0.073
Find medical career challenging	370	-0.059	0.261
Dimension 4: patient care and working with people			
Want to care for/help people	370	-0.036	0.490
Enjoy interacting in professional settings	370	0.118	0.024
Dimension 5: use of personal skills			
Value careers requiring manual skills	370	0.069	0.185
Value careers requiring mental skills	370	-0.036	0.485
Dimension 6: interest in science			
Want career with research opportunities	370	0.039	0.458
Have general interest in science	370	-0.018	0.728
Want a science-based occupation	370	-0.023	0.665
Have had work experience with doctors[a]	370	0.063	0.225

Note. Correlation is significant at 0.01 level (2-tailed), r_s = Spearman Correlation coefficient, NPI-16 = Narcissistic Personality Inventory.
Bonferroni correction was applied for 17 comparisons, resulting in an adjusted significance threshold of $p < .0029$ (0.05/17). Only "Offers prestigious social standing" ($p = .001$) remained statistically significant after correction. Medicine offers high professional status ($p = .005$), Self-employment and independence ($p = .026$), and Enjoy interacting in professional settings ($p = .024$) were significant only before correction and are reported as exploratory.
[a]This item was included in the 17-item questionnaire but does not map onto one of the six thematic dimensions.

Male students had significantly higher NPI-16 scores than female students. NPI-16 scores did not differ significantly across academic years or across age groups. The Jonckheere–Terpstra test showed no significant monotonic trend across ordered academic years. Group medians, IQRs, ranges, and test statistics are shown in Table 3.

Table 3
Comparison of NPI-16 Scores Across Demographic and Academic Groups.

Group	N	Median (IQR)	Min–Max	p-value	Test statistic
Study year				.177	H = 6.305, df = 4
1st	74	4 (1-6)	0-14		
2nd	74	2 (1-6)	0-15		
3rd	74	3 (1-5)	0-13		
4th	74	2 (1-4)	0-10		
5th	74	3 (1.7-5)	0-12		
Age (group)				.760	H = 0.548, df = 2
18-20	109	3 (1-6)	0-11		
21-24	223	3 (1-5)	0-14		
>24	38	3(1-4)	0-7		
Gender				**.015**	**U = 14,621, Z = −2.438**
Male	182	3 (1-6)	0-15		
Female	188	2 (1-4)	0-14		

Note. N = sample size; IQR = interquartile range; Min–Max = minimum-maximum. Mann-Whitney U test was used for gender and Kruskal–Wallis H test for age group and study year. $p < .05$ was considered statistically significant.

DISCUSSION

Based on the available published literature, this cross-sectional study may be among the few multi-institutional studies to examine patterns of narcissistic traits among medical students and their associations with career motivations.

In this cross-sectional study of 370 medical students in Pakistan, 29.5% of participants had NPI-16 scores in the borderline or higher categories. Male students had higher median NPI-16 scores than female students in our sample. This finding is consistent with some previous studies. For example, a study conducted among medical and allied health students in Lahore reported higher NPI scores among male students than female students.[13] Similarly, a study from Germany reported higher scores among male students than female students.[14] However, other studies have reported no clear sex differences in narcissistic trait scores among medical students.[5] These findings suggest that observed sex differences may vary across study populations, cultural contexts, and measurement approaches. Differences in NPI versions across studies (e.g., NPI- 40 vs. NPI-16) and differences in sampling may further account for discrepant findings.

No significant association was observed between age and NPI-16 scores in our study. This finding is consistent with a previous study that reported no significant relationship between age and narcissistic trait scores.[15] In contrast, other research has suggested that narcissistic trait scores may decrease with increasing age, potentially reflecting developmental and maturational changes.[12,16] The absence of an age-related pattern in the present study may partly be explained by the relatively narrow age range of the participating medical students.

A previous study conducted in Pakistan reported variation in mean NPI scores across the years of medical education, with mean scores of 14.83 in the first year, 15.52 in the third year, 11.81 in the fourth year, and 13.92 in the final year.[13] In contrast, our study did not identify a significant difference in

NPI-16 scores across academic years. This finding is consistent with another study that reported no significant association between NPI scores and year of study.[14] The absence of a significant difference across academic years suggests that NPI-16 scores were relatively similar across the academic stages represented in our sample. However, given the cross-sectional design, these findings should not be interpreted as evidence that narcissistic traits remain unchanged throughout medical training.

In the present study, before Bonferroni correction, higher NPI-16 scores were weakly positively associated with four career-motivation items related to professional status, prestigious social standing, self-employment or independence, and enjoyment of professional activities. Following the correction for multiple comparisons, the association with prestigious social standing was the sole one to remain statistically significant. The remaining three associations did not remain significant after correction and ought to be regarded as exploratory rather than definitive, as the correlation coefficients were small and showed weak associations of limited magnitude. These items concerned the desire for social acknowledgment, higher-ranking positions, social independence or autonomous working, and performing well in the profession.

Furthermore, previous research suggested that the association between status or recognition related career motivations and higher NPI-16 scores might be present in this sample. The observed correlations are interpreted as likely connections between these career motivations and higher NPI-16 scores.[5] Nevertheless, the small correlation coefficient indicates that this relationship, while statistically significant after correction, is limited in magnitude and should not be interpreted as a strong association**.** Maslow's hierarchy of needs similarly conceptualizes esteem-related needs, including prestige, status, and recognition, as potential sources of motivation.[17] In this context, the observed associations may indicate that status- and recognition-related career motivations have some relationship with higher NPI-16 scores in this sample.

Previous literature has also reported relationships between narcissistic traits and motivations involving recognition, status, and interpersonal influence. In contrast, our study found no significant associations between NPI-16 scores and motivations related to helping others or general interest in science. These findings are broadly consistent with previous research examining the relationship between narcissistic traits and prosocial or helping-oriented motivations.[18] However, the absence of statistically significant associations should not be interpreted as evidence that students lacked altruism, empathy, or interest in science. Rather, these findings indicate that such motivations were not significantly related to NPI-16 scores in the present sample.

These findings are broadly consistent with previous research examining motivations for pursuing a career in medicine. Review studies have identified scientific interest and altruistic motivations, including a desire to serve others, as commonly reported reasons for choosing medicine.[18–20] Research from higher-income settings has frequently highlighted interest in scientific or research-related activities and opportunities to contribute to society as important considerations.[21] In low- and middle-income settings, previous studies have also identified motivations related to professional status and helping others.[17] The absence of significant associations between NPI-16 scores and motivations related to helping others or interest in science in the present study may indicate that these motivations were not closely related to individual differences in narcissistic traits within this sample. However, these findings should not be interpreted as evidence of a distinct or fixed motivational profile. In medical education, the motivation

of students for the chosen career can be influenced by various factors, which can help to inform educational approaches that support empathy, patient-centered care and professional values.

One of the strengths of the study was its multi-institutional design as participants were recruited from four medical colleges of Sialkot, Pakistan, and an equal number of participants were recruited from each academic year of MBBS. Questionnaires were administered and collected in person which helped with direct distribution and enabled complete responses. Inclusion of students from multiple institutions and academic years provided representation across different stages of undergraduate medical education rather than relying on a single institution or academic cohort. These methodological features may enhance the contextual breadth of the findings within the study setting. However, they do not eliminate the potential for selection or non-response bias.

LIMITATIONS

Several limitations should be considered when interpreting the findings. First, the cross-sectional design prevents establishing temporal or causal relationships between narcissistic traits and career motivations. The use of self-reported measures may introduce response and social-desirability bias. In addition, the NPI-16 primarily assesses grandiose aspects of narcissistic traits and is not a diagnostic instrument for narcissistic personality disorder. Participant recruitment from four medical colleges within Sialkot may limit the generalisability to other regions or educational settings. Furthermore, because the numbers of students approached, refused participation or excluded were not systematically recorded, potential non-response bias could not be assessed. The analysis of career motivations was conducted on individual items rather than validated composite dimensions, so the results show associations with specific items. The study had restricted power to detect weak associations due to its power for prevalence estimation. Thus, the non-significant findings should be viewed cautiously.

CONCLUSION

The study found no significant association between overall career motivation and narcissistic traits among medical students. Male students showed modestly higher narcissistic traits than female students, whereas traits did not differ by academic year or age. However, a weak positive association with the desire for prestigious social standing remained significant after correction for multiple comparisons. No significant associations were observed with altruistic motivations or interest in science. These findings suggest a limited relationship between narcissistic traits and specific status-related career motivations.

RECOMMENDATIONS

Medical curricula should promote self-awareness, empathy, ethical practice and patient-centred care alongside professional development. Future longitudinal, multi-regional studies using culturally validated instruments are warranted to further explore these relationships.

FUNDING

None

CONFLICT OF INTEREST

None

DATA AVAILABILITY STATEMENT

The datasets generated and analyzed during the current study are not publicly available because they contain participant-level information collected under institutional ethical approval and consent conditions.

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3	Afifa Fahim	Dow University of Health Sciences, Karachi, Pakistan.	Formal Analysis, Data Analysis, Results Writing and Final approval
4	Tajwar Khatoon	Kohat University of Science and Technology (KUST), Pakistan	Conceptualization, Review & Editing and Final approval