

Original Article

The interrelationship of personality with stress in medical students

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Abstract

Background and Aim: Medicine, as we know, is a demanding career and students of medicine are prone to various forms of stress. Medical curriculum is stressful and requires the right type of personality to cope with the vast curriculum and study schedule. Stress adversely affects the students' academic performance and clinical skills. The sources of stress if studied along with the physiology of the learners' personality will help the students make the right career choice, thereby minimizing stress. Hence, if a student's personality is analyzed, a right career option may be made and stress may be reduced, to produce competent doctors. Therefore, the present study looks into the relationship of personality with the types of stresses faced by medical students.

Methods: This cross-sectional study was conducted in a medical college in East India. Students were given two validated questionnaires. Medical student stress questionnaire assesses the sources of stresses in medical students and classifies it into six types. The big-five personality questionnaire classifies students as having five major personality traits. The data were analyzed by Student's *t*-test and Chi-square test using SPSS version 22.

Results: Most of the medical students have academic stressors and agreeable personality traits with uniform gender distribution. Agreeable females have more academic stress. Overall, agreeable students have more statistically significant academic stress ($P < 0.01$).

Conclusion: An ideal doctor has an agreeable personality which most of our students have. The right blend of personality traits helps in alleviating stress, improving the academic outcome. The type of stress faced by the students and his/her personality should be kept in mind while helping students make a career choice and in curriculum designing.

Key words: Medical students, physiology of personality, stress physiology

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INTRODUCTION

Medicine is a very demanding career. Learners of medicine suffer from higher levels of stress than other professions, mainly due to the vast curriculum that they must imbibe and the high levels of perfection expected from them.^[1,2] High levels of stress may lead to deterioration of physical and mental health. The transition phase from school to a medical college is considered to be the most stressful of all the phases in the academic life of a medical student.^[3]

The kind of stresses that a learner of medicine faces need not be only academic though academic stress forms a major portion of the stresses involved. A student also faces interpersonal relationship stresses, social stress, and desire- and drive-related stress (DRS) to name a few.^[4] These are especially prominent in the 1st year of medicine

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where a student has to cope, adjust, and adapt to a sea of change. Depression and anxiety levels are also highest among these students.^[6]

To be academically brilliant and, therefore, an exceptional doctor, not just the cognitive abilities of the student play a role. A major factor involved here is the personality of the student as well.^[6] The previous studies have shown that students of a particular personality type show preference to a particular career and also that the type of personality may predict the academic outcome of the individual in addition to helping him/her cope with the stresses of his/her profession.^[7-9]

An exploration of the personality traits may help us understand with clarity if an individual is the right fit in his/her profession and if he/she may be better suited to a particular profession and all the stresses that form an integral part of that profession. To become a good learner, the personality of the learners must be explored along with the stresses which affect them the most. This was the aim with which the present study was conducted in the 1st year Indian medical students. While plenty of research has been done on stress levels in medical students, there is a paucity of research in the Indian scenario regarding the type of stresses the students have to overcome and the type of personality they belong to and if these two variables are interdependent on each other. Therefore, in the present work, we have planned to study the personality types, stress types in medical students, and their interrelationship.

MATERIALS AND METHODS

This cross-sectional study was carried out among the 1st year medical students of IQ City Medical College, Durgapur, India. The Institutional Ethical Clearance was obtained. Of the 150 students, 143 gave the consent and participated in the study. They were given a general questionnaire to fill in regarding their age, sex, parents' occupation, education, and if they were staying in the hostel, and complete confidentiality was maintained. In addition to this, two questionnaires were given to them regarding their personality and stress types.^[4,10] The study was conducted within the 1st month of their joining the medical school in the classroom during physiology theory class. Clear instructions were given to the students to follow. It took about 30 min for the students to fill the questionnaires. The results so obtained were tabulated and statistical tests such as Student's *t*-test, Chi-square test were done using SPSS software version 22 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). The total duration of the study was 2 months.

Medical students stress questionnaire

Is a validated questionnaire used to identify the source of stresses. Medical students stress questionnaire has 40

questions, each of which can be a source of stress that the student faces in his/her academic life. These sources of stress are grouped into six main domains, namely, academic-related stressors (ARS), intra- and inter-personal-related stressors (IRS), teaching- and learning-related stressor (TLRS), social-related stressor (SRS), desire and drive related stressor (DRS), and group activities-related stressor (GARS). These questions are graded from 0 (no stress at all) to 4 (severe stress) on a Likert scale.^[4]

Personality questionnaire: IPIP big-five factor markers

This validated questionnaire contains 50 items graded on a 5-point Likert scale from 1 (disagree), 2 (slightly disagree), 3 (neutral), 4 (slightly agree) to 5 (agree). The big-five factors of personality are: Extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience.^[10-12]

- Extraversion is the personality trait of seeking fulfillment from sources outside oneself or in the community
- Agreeableness is the adjustment of one's behavior to suit others
- Conscientiousness is the personality trait of individuals who are generally honest and hard working
- Neuroticism is the personality trait of individuals who are highly emotional
- Openness to experience is the personality trait of people who are dreamers and seek new experiences.^[13]

RESULTS

Figure 1 shows the demographic distribution of the study population. The sample size consists of 143 students, of which 65 are male and 78 are female as shown in Figure 1. The questionnaire of 2 of the students was incomplete and hence contributes to missing data.

Table 1 shows the distribution of the students into the various kinds of stresses based on gender. All students had stresses distributed among the various types, but ARS leads with 57% of the students having this kind of stress, followed by teaching learning-related stress, inter- and intra-personal stressors, GARS, and SRS. DRS was the least with <1% of

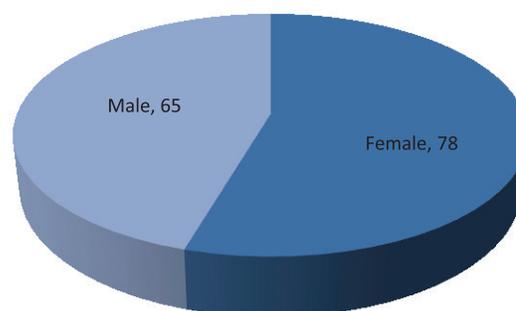


Figure 1: Sex distribution of the study group

Table 1: Distribution of various stress types among the sexes

Gender	Stress score							Total
	ARS	IRS	TLRS	SRS	DRS	GARS	-	
Female								
Count	48	8	12	3	1	4	2	78
Percentage within gender	62	10	15	4	1	5	3	100.00
Male								
Count	34	14	11	3	0	3	0	65
Percentage within gender	52	22	17	5	0	4	0	100.00
Total								
Count	82	22	23	6	1	7	2	143
Percentage within gender	57	15	16	4	0.70	5	1	100.00

Data expressed in absolute count and percentages. ARS: Academic-related stress, IRS: Inter/intrapersonal-related stressor, TLRS: Teaching learning-related stress, SRS: Social-related stress, DRS: Desire- and drive-related stress, GARS: Group activity-related stress

the class suffering from it. The gender distribution shows a predominance of academic stressors in both sexes (62% of females and 52% of males). Males have no DRS, while the rest of stresses form a similar pattern between both the genders.

Table 2 shows the descriptive data of personality types in the sexes. Among the five different types of personality trait, 48% of this study group belonged to the agreeable type of personality, followed by conscientiousness (19%), neuroticism (14%), openness (13%), and extraversion (4%). When the gender was analyzed, both girls and boys were predominantly agreeable (51% of girls and 45% of boys). Among the girls, agreeableness is followed by conscientiousness (16%), neuroticism (13%), openness (12%), and extraversion (4%), and in boys, agreeableness is followed by conscientiousness (21%), neuroticism (13%), openness (12%), and extraversion (4%).

Table 3 shows the overall distribution of students with different personality types organized into different stress types which was analyzed using Chi-square test. Irrespective of the personality, academic stressors was the highest. Notable is the fact that out of 20 students who had neurotic personality, 14 had academic stress, while DRS and GARS were nonexistent. On comparing DRS and GARS, it is interesting to note that only agreeable personalities have this stress. This difference was found to be statistically significant at $P < 0.01$.

Table 4 depicts the sex-wise distribution of the students with different personalities grouped into different stress types. The association of gender on the personality type and the stress type is illustrated in this table. The effect of personality on stress type among females was found to be statistically significant. 28% of the female students show agreeable trait, and of these, 55% of the girls had ARS. The distribution of stresses in the females shows that agreeable girls in addition to ARS also have IRS (10%),

Table 2: Distribution of different personality traits among the sexes

Gender	Personality						Total
	O	A	C	E	N	-	
Female							
Count	9	40	13	3	10	3	78
Percentage within gender	12	51	16	4	13	4	100.00
Male							
Count	9	29	14	3	10	0	65
Percentage within gender	14	45	21	5	15	0	100.00
Total							
Count	18	69	27	6	20	3	143
Percentage within gender	13	48	19	4	14	2.0	100.00

Data expressed in absolute count and percentages. O: Openness, A: Agreeableness, C: Conscientiousness, E: Extraversion, N: Neuroticism

TLRS (1%), SRS (1%), DRS (1%), and GARS (5%). The males differ from females in having IRS (5%), TLRS (5%), TLRS (1%), DRS (0%), and GARS (2%). The differences between the stresses and personality among females were found to be statistically significant at $P < 0.01$.

DISCUSSION

The first personality inventories were developed over 85 years ago, and the progress in terms of understanding the science of personality has been dismal.^[13] In this regard, understanding the personalities of the young adult learners who want to become doctors has been especially poor. The right blend of personalities in a student will make him or her suitable, and an expert in the profession chosen. Lack of this blend and an inappropriate choice would naturally result in inadequacies in meeting the professional demands, ultimately translating into stress. The expected outcome of higher stress is poor academic performance with a lower quality of life.^[1] The stressors in medical school can be unique and different from the kind of stressors that challenge students in other

Table 3: Distribution of types of stress in various personalities

Personality	Stress score (%)							Total (%)
	ARS	IRS	TLRS	SRS	DRS	GARS	-	
A	38 (27)	9 (6)	13 (9)	2 (1)	1 (1)	6 (4)	0	69 (48)
C	14 (10)	10 (7)	2 (1)	1 (1)	0	0	0	27 (19)
E	5 (3)	0	0	0	0	1 (1)	0	6 (4)
N	14 (10)	2 (1)	3 (2)	1 (1)	0	0	0	20 (14)
O	10 (7)	1 (1)	5 (3)	2 (1)	0	0	0	18 (13)
-	1 (1)	0	0	0	0	0	2 (1)	3 (2)
Total	82 (57)	22 (15)	23 (16)	6 (4)	1 (1)	7 (5)	2 (1)	143** (100)

** $P \leq 0.01$ Chi-square test used. ARS: Academic-related stress, IRS: Inter/intrapersonal-related stressor, TLRS: Teaching learning-related stress, SRS: Social-related stress, DRS: Desire- and drive-related stress, GARS: Group activity-related stress, O: Openness, A: Agreeableness, C: Conscientiousness, E: Extraversion, N: Neuroticism

Table 4: Distribution of types of stress in various personalities and genders

Gender	Personality	Stress score (%)							Total (%)
		ARS	IRS	TLRS	SRS	DRS	GARS	-	
Female	A	22 (28)	4 (5)	8 (10)	1 (1)	1 (1)	4 (5)	0	40 (51)
	C	8 (10)	3 (4)	1 (1)	1 (1)	0	0	0	13 (17)
	E	3 (4)	0	0	0	0	0	0	3 (4)
	N	8 (10)	1 (1)	1 (1)	0	0	0	0	10 (13)
	O	6 (8)	0	2 (3)	1 (1)	0	0	0	9 (12)
	-	1 (1)	0	0	0	0	0	2 (3)	3 (4)
Male	Total	48 (62)	8 (10)	12 (15)	3 (4)	1 (1)	4 (5)	2 (3)	78** (100)
	A	16 (25)	5 (8)	5 (8)	1 (2)	0	2 (3)	0	29 (45)
	C	6 (9)	7 (11)	1 (2)	0	0	0	0	14 (22)
	E	2 (3)	0	0	0	0	1 (2)	0	3 (5)
	N	6 (9)	1 (2)	2 (3)	1 (2)	0	0	0	10 (15)
	O	4 (6)	1 (2)	3 (5)	1 (2)	0	0	0	9 (14)
	Total	34 (52)	14 (22)	11 (17)	3 (5)	0	3 (5)	0	65 (NS) (100)

** $P \leq 0.01$ Chi-square test used. NS: $P > 0.05$. ARS: Academic-related stress, IRS: Inter/intrapersonal-related stressor, TLRS: Teaching learning-related stress, SRS: Social-related stress, DRS: Desire- and drive-related stress, GARS: Group activity-related stress, O: Openness, A: Agreeableness, C: Conscientiousness, E: Extraversion, N: Neuroticism, NS: Not significant

professions.^[1] In India, in particular, the transition phase from school to medical school can be very tough leading to maladaptation in many students. Hence, this study was designed to evaluate the personalities of the Indian medical students, the types of stresses faced in medical school and to find a correlation if any between them, also keeping in mind the diverse economic and educational backgrounds of the students' families.

The distribution of the students into the various kinds of stresses is shown in Table 1. All the students analyzed had stresses but of different types. ARS form the major kind of stress among the students followed by TLRS. The least type of stress felt was DRS. ARS is uniformly distributed. However, girls have more teaching and learning stress when compared to boys, while boys have a higher level of intra/interpersonal-related stress. Boys in this study group showed a complete absence of DRS. In similar studies done in India, the prevalence of academic stress was found to be the highest.^[14,15] However, the number of students facing interpersonal and intrapersonal stress was found to be higher in this study compared to other studies. Furthermore, an interesting observation was the presence of significant amount of DRS which is

almost nonexistent in this study.^[14] The reason for a high academic stress may be attributed to lack of adjustment by the students to the new curriculum, new college, and newer styles of teaching when compared to premed school. Furthermore, adjustment to new classmates and hostel life may lead to the development of interpersonal and intrapersonal stresses. In a study done on female students in Saudi Arabia, distribution of stress type among female students was similar to the findings of this study; however, as they proceed to the subsequent years of medicine, DRS were seen to be more prominent.^[16] This needs to be further evaluated in our student population.

Among the five different types of personality traits analyzed in this study, agreeable personality was the most prevalent trait among the study participants as shown in Table 2. The next most prominent trait seen was conscientiousness, followed by neuroticism, openness, and finally extraversion. This trend does not demonstrate a significant gender variation either. A study into the psychology of personality illustrates that a doctor is found to be warm, cooperative, empathetic, and calm, is considered an ideal doctor and these are the traits of agreeableness.^[17] Hence, it stands to reason that a

student with an agreeable personality should blossom into an ideal doctor. About 48% of our students have the trait of agreeableness in them. Knowledge of the students' personality along with their intellectual skills should be taken into account in making a career choice. Similar studies done in Europe showed that those students who choose medicine as their career have higher levels of agreeableness and extraversion. In our study, though the majority of the students are agreeable, very few demonstrate the extraversion trait.^[6] This study population scores more on the conscientiousness trait unlike the research done in France, wherein 3rd year students of medicine scored low on agreeableness and openness. They also noted a gender variation. Female students tend to be more agreeable and conscientious than male students.^[17]

Most of the literature classifies personality into types A and B based on the BECK anxiety inventory, and the stress levels were studied using higher education stress inventory, major depression inventory, etc. All these studies conclude that students of medicine are stressed out. However, there is limited information available on the types of stresses that the student faces or on the type of personality he/she has, and if his/her personality determines what type of stress he/she feels, how he/she copes with it. The association between stress type and personality trait is shown in Table 3. Research indicates that people with neuroticism traits have a higher level of stress.^[18] In this study, we observe that neuroticism ranks third among our students, and there is no significant relationship of stress with this personality. We observe that the agreeableness is the trait most of our study group has, and the type of stress faced by them is the academic stress which is statistically significant. This is in accordance with the study done by Shelke *et al.*^[19]

The association of gender on personality type and the stress type is an interesting concept. The effect of personality on stress type among females was found to be statistically significant [Table 4]. Most agreeable girls have ARS. Males showed more neurotic behavior than their counterparts, and irrespective of the personality type or gender, academic stressor was the predominant stressor, followed by TLRS in women and interpersonal and intrapersonal relationship stressor in men. Personality also helps cope with stress.^[20] This makes an important issue for debate. The knowledge of the type of stress helps in designing interventional strategies and curriculum changes to minimize the impact of stress on students. An easy transition into professional college, a more student-centric curriculum and implementation of modern teaching learning strategies, and most importantly, choosing the right candidate for a profession may go a long way to alleviate the different types of stress.^[17] The point to be highlighted here is that

our study group shows minimal DRS. A near absence of this stress type in students indicates that the profession chosen by them is of their choice and that they have not been coerced into it. It also indicates a happy and safe family background with family backing to pursue a course as tough as medicine.^[16] However, more studies are needed to identify the effect of family background on personality and stress. Although research has conflicting evidence on the right blend of characteristics required to make a good doctor, there is a general consensus that if a student is agreeable and conscientiousness, it would make him/her an ideal doctor.^[6] That is the case with this study group. However, a follow-up of these students regarding the assessment of stress types and academic scores would be ideal.

Limitations of the study

The present study has limitations with regard to the sample size used. A study involving a larger sample size spread across various states of India and other countries would give a holistic view of the various kinds of stresses faced by the medical students worldwide in relation to their personalities.

CONCLUSION

A career in medicine is inherently stressful. A wrong choice of career would lead to severe stress. To fit into a particular profession, certain personality traits are essential. These traits would help in coping with stress, alleviating it, and would ensure an optimal performance in academics. Knowledge of the various types of stresses, if identified, would call for appropriate interventional strategies both in terms of curriculum designing and stress-relieving techniques. This study also suggests that in addition to common entrance exams conducted centrally in India for admission into medical courses, an assessment of the personality of the student would go a long way in creating ideal doctors.

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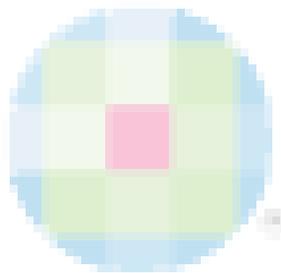
Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Al-Dubai SA, Al-Naggar RA, Alshagga MA, Rampal KG. Stress and coping strategies of students in a medical faculty in Malaysia. *Malays J Med Sci* 2011;18:57-64.
2. Mohanty IR, Mohanty N, Balasubramaniam P, Joseph D, Deshmukh Y. Assessment of stress, coping strategies and lifestyle among medical students. *Indian J Prev Soc Med* 2011;4:294-300.
3. Radcliffe C, Lester H. Perceived stress during

- undergraduate medical training: A qualitative study. *Med Educ* 2003;37:32-8.
4. Yusoff MS. A confirmatory factor analysis study on the medical student stressor questionnaire among Malaysian medical students. *Edu Med J* 2011;3:44-53.
 5. Stewart SM, Betson C, Lam TH, Marshall IB, Lee PW, Wong CM. Predicting stress in first year medical students: A longitudinal study. *Med Educ* 1997;31:163-8.
 6. Lievens F, Coetsier P, De Fruyt F, De Maeseeneer J. Medical students' personality characteristics and academic performance: A five-factor model perspective. *Med Educ* 2002;36:1050-6.
 7. Parlow J, Rothman AI. Personality traits of first year medical students: Trends over six-year period 1967-1972. *Br J Med Educ* 1974;8:8-12.
 8. Donnay-Richelle J. Personality and career choice. *Bull Psychol* 1990;43:785-95.
 9. Shen H, Comrey AL. Factorial validity of personality structure in medical school applicants. *Educ Psychol Meas* 1995;55:1008-15.
 10. Goldberg LR. The development of markers for the big-five factor structure. *Psychol Assess* 1992;4:26-42.
 11. Donahue JE, Kentle R. The Big Five Inventory Versions 4a and 54. Institute of Personality Assessment and Research. Technical Report. Berkeley, CA: University of California, Berkeley; 1991.
 12. Goldberg LR. The development markers for the big-five factor structure. *Psychol Assess* 1992;4:26. Available from: http://www.ipip.ori.org/New_IPIP-50-item-scale.htm. [Last cited on 2016 July 07].
 13. Goldberg LR. A broad bandwidth, public domain, personality inventory measuring the lower level facets of several five factor models. In: *Personality Psychology in Europe*. 1st ed., Vol. 7. Tilburg: Tilburg University Press; 1999. p. 7-28.
 14. Gupta S, Choudhury S, Das M, Mondol A, Pradhan R. Factors causing stress among students of a medical college in Kolkata, India. *Educ Health (Abingdon)* 2015;28:92-5.
 15. Reang T, Bhattacharya H. A study to assess the emotional disorders with special reference to stress of medical students of Agartala Government Medical College and Govinda Ballabh Pant Hospital. *Indian J Community Med* 2013;38:207-11.
 16. Habbe KA. Prevalence of stressors among female medical students Talibah University. *J Talibah Univ Med Sci* 2010;5:110-9.
 17. Plaisant O, Courtois R, Toussaint PJ, Mendelsohn GA, John OP, Moxham BJ. Medical students big five personality scores and the effects on the selection process. *Eur J Anat* 2011;15:121-8.
 18. Tyssen R, Dolatowski FC, Røvik JO, Thorkildsen RF, Ekeberg O, Hem E, *et al.* Personality traits and types predict medical school stress: A six-year longitudinal and nationwide study. *Med Educ* 2007;41:781-7.
 19. Shelke US, Kunkulol RR, Narwane SP. Level of stress in final year MBBS students at rural medical college: A cross sectional study. *Int J Med Res Health Sci* 2014;3:886-91.
 20. Afshar H, Roohafza HR, Keshteli AH, Mazaheri M, Feizi A, Adibi P. The association of personality traits and coping styles according to stress level. *J Res Med Sci* 2015;20:353-8.



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