

DEPRESSION AND ANXIETY IN ROMANIAN MEDICAL STUDENTS: PREVALENCE AND ASSOCIATIONS WITH PERSONALITY

ROXANA VLAD^{1#}, FLORINDA GOLU^{1#}, ANA TOMA¹, DOINA DRĂGĂNESCU², BOGDAN OPREA^{1*}, BOGDAN IONUȚ CHIPER³

¹Department of Psychology, University of Bucharest, Romania

²Department of Pharmaceutical Physics and Informatics, "Carol Davila" University of Medicine and Pharmacy, Romania

³Bucharest University of Economic Studies, Romania

*corresponding author: bogdanteodor.oprea@drd.unibuc.ro

#Authors with equal contribution.

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Abstract

Medical students have long been considered a population at high risk for depression and anxiety. Personality traits are important contributing factors, either increasing or decreasing the vulnerability to such emotional difficulties. We aimed to assess the prevalence of anxiety and depressive symptoms in Romanian medical students and we tested whether personality factors increased the risk for mental health problems among them. A sample of 315 Romanian medical students completed a series of questionnaires regarding their personality and their level of depression and anxiety. Approximately 8% of the students were identified with a severe level of depression and 9% with a severe level of anxiety. Depression and anxiety were strongly correlated. Conscientiousness negatively correlated with both depression and anxiety and neuroticism positively correlated with the two clinical symptoms. These findings highlight the need for prevention and treatment programs in medical schools, in order to effectively identify and treat at-risk medical students.

Rezumat

Studentii de la medicină au fost considerați mult timp o populație cu un risc ridicat pentru depresie și anxietate. Trăsăturile de personalitate reprezintă factori cu o contribuție importantă, crescând sau reducând vulnerabilitatea pentru astfel de dificultăți emoționale. Ne-am propus să evaluăm prevalența anxietății și depresiei la studenții de la medicină din România și am testat dacă factorii de personalitate cresc riscul pentru probleme de sănătate mintală. Un eșantion de 315 de studenți români de la medicină au completat un set de chestionare cu privire la personalitate, depresie și anxietate. Aproximativ 8% dintre studenți au fost identificați cu depresie severă și 9% cu anxietate severă. Depresia și anxietatea s-au corelat puternic. Conștiințiozitatea s-a corelat negativ cu depresia și anxietatea, iar nevrotismul pozitiv cu cele două simptome clinice. Rezultatele subliniază importanța programelor pentru prevenție și tratament în facultățile de medicină, pentru a identifica și trata eficient studenții cu un risc ridicat.

Keywords: medical students, depression, anxiety, prevalence

Introduction

The high prevalence of psychological distress among medical students has been a matter of major concern in the past years [26, 30] with studies consistently emphasizing concerning levels of depression, anxiety and burnout among students in various countries [8, 17-19, 29, 31]. Numerous stressors, such as heavy workload, parental pressures and the highly competitive environment impact medical students' well-being [1, 2], often leading to an increase in symptoms of burnout, such as feelings of exhaustion and cynicism [11]. Poor mental health, as well as its negative effects on academic performance has also been reported in Romanian medical students [21, 25], pointing to the need to identify and accurately assess potential protective or risk factors, such as personality traits, in this population.

The most investigated model of personality structure is the Big Five model [4], due to its cross-cultural

validity and it includes: extraversion (persons' tendency to be gregarious, sociable, assertive, active and talkative), agreeableness (being trusting, cooperative, forgiving and tolerant), conscientiousness (being organized, planful, responsible and dependable), emotional stability (the tendency towards being depressed, angry, anxious, embarrassed, worried and insecure) and openness (being original, curious, imaginative, broad-minded and artistically sensitive). The association between personality traits and well-being indicators in medical students might be explained through the stress-vulnerability model [38]. According to this framework, mental illness is the result of the interaction between certain vulnerability factors (genetic or environmental in nature) and various stressors that people encounter along their lives. The vulnerability-stress model suggests that, even when vulnerability is low, high levels of stress (as is the case in medical practice) might lead to emotional difficulties [38]. Indeed, the prevalence

of anxiety and depressive disorders is higher among medical students [12], probably as a result of the high levels of stress they have to cope with during medical school and further into their profession [14]. In agreement with the stress-vulnerability model, it has been suggested that personality traits might influence medical students' psychological functioning, making them either more vulnerable to or protecting them against depletion of their emotional resources [36]. In the context of medical practice, higher personality vulnerability, as reflected, for example, in higher levels of neuroticism, has been consistently associated with lower resilience and poorer mental health [7, 16, 28, 32]. On the other hand, agreeableness, conscientiousness, extraversion, and openness to experience have been found to act as buffers against emotional difficulties in medical students [23, 32]. However, no studies so far have investigated the prevalence of mood disorders among Romanian medical students, as well as potential vulnerability or protective personality traits. Thus, the current study aims to assess the prevalence of depression and anxiety in this population, as well as their associations with personality traits. Results could point to the need for prevention or treatment programs (psychological or pharmacological in nature) for vulnerable medical students.

Materials and Methods

Participants and Procedure. The sample consisted of 315 Romanian medical students from two universities. 264 (83%) were women and 51 (16.2%) were men. The average age of the sample population was 22.86 years (SD = 2.68). 52 (16.5%) were in the first year of medical school, 37 (11.7%) in the second year, 38 (12.1%) in the third year, 41 (13%) in the fourth year, 33 (10.5%) in the fifth year, and 114 (36.2%) in the sixth year. Participants were recruited through the social networks of medical students. The first page of the survey informed the participants of the objective of the study (examining the prevalence of depression and anxiety) and explained that the individual data would be confidential. The completion of the instruments took in average 20 minutes. There were no missing values. The data collection process took two months.

Measurement Instruments. Depression was measured with Beck Depression Inventory [6]. Respondents are asked to carefully read each group of statements and choose the one that best describes how they have felt in the last two weeks, including the day the

inventory is completed. Each item is scored on a 4-step scale, from 0 to 3. The maximum total score that can be obtained is 63. An example item includes: "0. I feel the same about myself as ever. 1. I have lost confidence in myself. 2. I am disappointed in myself. 3. I dislike myself." Anxiety was measured with Beck Anxiety Inventory [5]. It includes a list of anxiety-specific symptoms. Respondents are asked to carefully read each item in the list and indicate how much they were disturbed by these symptoms in the last month, including the day of completion. The inventory uses a scale from 0 (not at all) to 3 (severe). An example item includes: "Heart pounding or racing." Personality was measured using Mini-IPIP Scales [9]. This instrument contains 20 of the 50 items in the International Personality Item Pool - Five-Factor Model and has been developed and validated through five studies. It measures the five factors of personality: extraversion ("Talk to a lot of different people at parties."), agreeableness ("Feel others' emotions."), neuroticism ("Have frequent mood swings."), conscientiousness ("Get chores done right away.") and openness ("Have a vivid imagination.").

Statistical Approach. Statistical analyses were performed with IBM SPSS Statistics 23. To analyse the data according to the objectives of the study, the following statistical procedures were used: frequency computations for prevalence estimations; correlation analysis for personality-mood disorders associations and hierarchical multiple regression for the variance in mood disorders explained by the personality factors taken together. Other studies investigating the relationship between personality and well-being in medical students have also used correlation and regression analyses, in populations of medical students from various countries [23, 28]. The formula for multiple linear regression is:

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots + \beta_px_i + \epsilon$$

where y = dependent variable; x_i = explanatory variables; β_0 = intercept (constant term); β_p = slope coefficients for each explanatory variable; ϵ = the model's error term (the residuals).

Results and Discussion

Prevalence. After scoring medical students' responses on depression and anxiety inventories, based on frequencies analysis, we calculated the percentage values for the two clinical symptoms. Results are presented in Table I.

Table I
Prevalence of depression and anxiety among medical students

	Frequency/Percent		Frequency/Percent
Minimal depression	189/58.2%	Low anxiety	228/70.2%
Mild depression	64/19.7%	Moderate anxiety	67/20.6%
Moderate depression	45/13.8%	Severe anxiety	30/9.2%
Severe depression	27/8.3%		

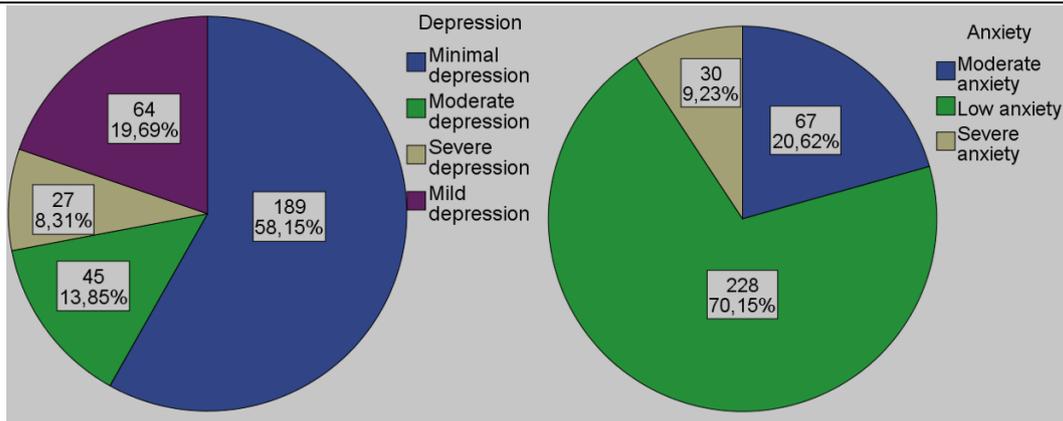


Figure 1.

Prevalence of depression and anxiety for medical students

Descriptive Statistics and Correlations. Table II illustrates the mean scores, standard deviations, reliabilities, and zero-order correlations of the study

variables. Cronbach's alpha reliabilities indicate good psychometric properties of the scales.

Table II

Descriptive statistics and correlations of the study variables

	Mean ± SD	1	2	3	4	5	6	7
1. Extraversion	11.17 ± 4.31	(0.83)						
2. Agreeableness	15.47 ± 3.36	0.14*	(0.74)					
3. Conscientiousness	13.07 ± 3.66	0.08	-0.04	(0.64)				
4. Neuroticism	13.30 ± 3.75	-0.20**	0.03	-0.35**	(0.71)			
5. Openness	15.63 ± 3.61	0.16**	0.25**	0.06	-0.03	(0.76)		
6. Depression	13.08 ± 10.28	-0.31**	-0.01	-0.40**	0.63**	0.01	(0.93)	
7. Anxiety	16.50 ± 12.55	-0.16**	0.06	-0.37**	0.56**	.03	0.71**	(0.92)

Cronbach's alpha reliabilities are in parentheses on the diagonal, * p < 0.05, ** p < 0.01

Regression Analysis. A three-stage hierarchical multiple regression was conducted with depression and anxiety as the dependent variables. Neuroticism, conscientiousness and extraversion accounted for 46% of the variance in depression. Neuroticism and conscientiousness accounted for 35% of the variance in anxiety. Results are presented in Table III.

The current study aimed to test the prevalence of mood disorders in Romanian medical students, as well as their associations with the Big Five personality model. Severe levels of depression and anxiety have been found for 8 and 9 percent of medical students, respectively. Moreover, neuroticism and conscientiousness

significantly predict symptoms of mood disorders, with higher scores on neuroticism predicting poorer mental health, while higher conscientiousness has been linked with lower levels of both depression and anxiety. These results mirror those of other authors, in both medical and non-medical samples [7, 15, 27]. Potential explanations include the fact that individuals with high levels of neuroticism are overreactive to stressors and have poorer coping skills, making them more vulnerable to emotional attrition [10]. On the other hand, conscientiousness might facilitate more effective management of both personal and academic demands, thus promoting better mental health [24].

Table III

Hierarchical multiple regression for depression and anxiety

	Depression				Anxiety			
	β	R	R ²	ΔR ²	β	R	R ²	ΔR ²
Step 1. Neuroticism	0.63	0.63***	0.39	0.39	0.56	0.56***	0.32	0.32
Step 2. Neuroticism Conscientiousness	-0.20	0.66***	0.43	0.04	-0.20	0.59***	0.35	0.03
Step 3. Neuroticism Conscientiousness Extraversion	-0.19	0.69***	0.46	0.03	-0.04	0.59	0.35	0.00

*** p < 0.001

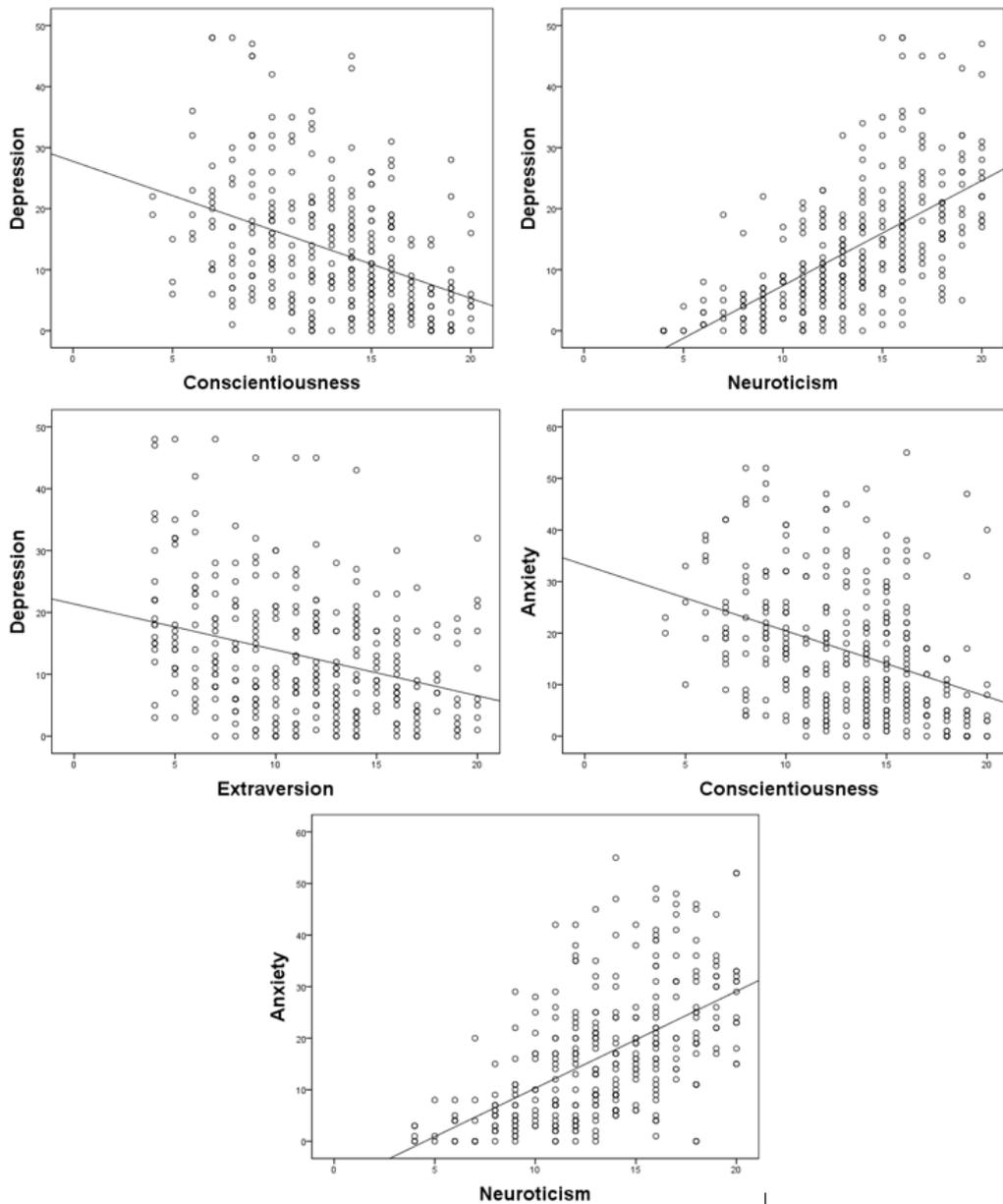


Figure 2.

Correlations between personality and mood disorders for medical students

From a practical standpoint, these results support the need to develop and introduce prevention and treatment programs early in the educational process [13, 33, 34], to prevent consequent erosion of students' psychological health and related effects on their performance [22]. They also suggest the need to assess students' personality traits in order to identify those who are vulnerable to depression and anxiety, and further instruct them on available strategies to increase their resilience. In order to do so, medical colleges may use psychological screening tests to identify vulnerable students (those high in neuroticism and low on conscientiousness) or students who already have mood disorders. Despite promising results, our study has several limitations. Firstly, our sample included students from

two medical universities, thus limiting the generalizability of our conclusions. Secondly, participants were not asked if they were receiving medication. Thus, it is possible that our results underestimate the prevalence of mood disorders, due to the lack of symptoms in the medicated students. Finally, we did not consider contextual factors, such as heavy workload or parental pressures, which would have allowed us to investigate the interaction between individual differences and external demands in predicting depression and anxiety. Future studies should thus investigate the role of other risk or protective factors (such as workload, social support, or drug use [20, 35]) in order to inform more complex interventions, that address both students and their educational environment. They should also focus

on scalable psychological solutions for identifying, preventing and treating anxiety and depression in medical students. Finally, future studies may focus on positive side effects of psychological and pharmaceutical interventions, such as increased sleep quality [37] or improved cognition [18].

Conclusions

This study has found concerning levels of mood disorders among Romanian medical students and emphasized the role of personality traits in the prediction of mental health outcomes among them. As such, medical institutions should assure proper assessment of students' personality and mental health during the educational process or internships [3]. This could further initiate psychological or pharmacological treatment programs aimed at promoting resilience against academic stressors among vulnerable individuals.

Conflict of interest

The authors declare no conflict of interest.

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