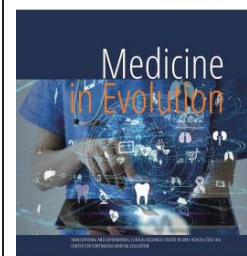


# Psychological well-being and satisfaction with life in relation to stress, anxiety, and depression among final-year medical students



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## Abstract

University medical degree programs are physically and mentally demanding, requiring continuous focus and hard work. Under these conditions, medical students tend to develop mental health problems during their studies. **Aim and objectives:** The study aimed to evaluate the inter-relationships between psychological well-being (PWB) and satisfaction with life (SWL) in connection to stress, anxiety and depression, in final-year medical students. **Material and methods:** The present work is an observational study carried out on 82 subjects. The data collection was cross-sectional, carried out using 3 tests, delivered in the form of online questionnaires. Spearman rank correlation coefficient was applied, with a significance level of 5% (95% confidence interval). **Results:** The results highlighted statistically significant negative correlations between stress, anxiety and depression with multiple dimensions of PWB, and a statistically significant positive correlation between PWB and SWL. In addition, female students reported significantly higher levels of stress, anxiety and depression compared to male students. **Conclusions:** Psychological comfort and satisfaction with life show a positive correlation, a fact that supports the integrative approach of the two concepts. Stress, anxiety and depression negatively influence of SWL and PWB, in the population of final year medical students.

**Keywords:** medical students, psychological well-being, stress, anxiety, depression

## INTRODUCTION

In the recent years, taking into account the SarsCov-2 pandemic, symptomatology of anxiety and depression has been frequently reported in studies conducted all over the world, with a predilection for people who activated in the field of healthcare, both professionals [ 1] and medical students [2]. In this context, the medical student population is in a risk group in terms of exposure to stress, anxiety and depression [3], which leads to increased prevalence of mental health problems, a fact that should not be ignored.

Psychological profiles represent a very important factor for choosing a medical profession and include a strong assessment of the humanistic aspects of medicine: openness to new experiences, a critical need for fulfilment in their career, and the conscious and unconscious desire to help people [4]. Medical degree programs in public and private universities aim to train and produce competent doctors and very good professionals for the benefit of the health system. Such programs are physically and mentally demanding, requiring continuous focus and hard work for a course of five or six years. Under these conditions, medical students tend to develop mental health problems during their studies [5], which include psychological stress, anxiety, depression, sleep disorders, exhaustion, eating disorders, and potentially hazardous alcohol use [6].

Psychological well-being (PWB) is a vast concept, representing a subjective perception for each individual and directly influencing the quality of personal life. PWB analyses the extent to which a person is prosperous in regard to the existential problems of life (for example, fulfilling meaningful goals, growing and developing as a person, establishing quality relationships with others) [7]. Well-being of an individual is closely related to his mental health. From a psychological point of view, there are two distinct dimensions of mental health: a positive dimension, corresponding to PWB, and a negative dimension, which includes psychological distress and mental disorders. Therefore, the assessment of subjects' mental health should investigate both dimensions. However, most studies on student mental health have only examined psychological distress, typically assessed in terms of depression, anxiety, and stress.

Contrary to the initial theories which stated that well-being is defined by the absence of psychopathological symptoms, the WHO (World Health Organization) has reconsidered mental health as an international health and development priority, and is now defining mental health as "a state of well-being in which an individual is aware of his or her own abilities, can cope with the daily stresses of life, can work productively and is able to make a contribution to his community" [8]. Starting with 1969, the study of PWB has been carried out in accordance with two primary concepts on the positive functioning of the individual [9]. According to the first concept, the PWB of a person is considered the result of individual position in relation to two independent dimensions, one of positive affects and the other of negative affects. The second primary concept claims that satisfaction with life (SWL) is the key indicator of well-being. These concepts have evolved and shaped differently, over time, but currently, the integrative approach of the two states of well-being is emphasized.

Therefore, assessment of student mental health should investigate both dimensions - psychological distress and psychological well-being. However, most studies of student mental health have only examined psychological distress, typically assessed in terms of stress, anxiety, and depression.

*Aim and objectives*

The main purpose of this study was to evaluate the relationships that exist between psychological well-being and satisfaction with life in connection to stress, anxiety and depression, within the final year medical students population.

**MATERIALS AND METHODS**

The target population of the study was represented by sixth year students from the Faculty of Medicine, "Victor Babeş" University of Medicine and Pharmacy in Timișoara. The criterion for inclusion in the study was the voluntary and full completion of the questionnaires distributed online. There were 82 subjects, 64 female and 18 male, aged between 23 and 34 years, who participated in this study.

The procedure for constituting the representative sample was carried out by simple randomization, of the random selection type, following the on-line completion of the questionnaires. The subjects come from urban and/or rural areas and are students in their last year of studies at the Faculty of Medicine. All participants were informed about the purpose and manner of conducting the study, and completing the questionnaires represented their voluntary consent to participate in the study.

*Study design*

The present work is an observational, correlational, non-experimental and transversal study that has tracked the relationships between the following variables: *anxiety, depression, stress, satisfaction with life (SWL), psychological well-being (PWB)* - including the six dimensions: *autonomy (A), control over the environment (E), personal development (G), positive relationships with others (R), purpose in life (P), self-acceptance (S)*.

The data collection was cross-sectional, and it was carried out using three tests, which were delivered online, using the Google Forms application. No special training of the examiner was required for their delivery, scoring or interpretation.

For data collection, the following psychological tests were used:

- *Psychological Well-Being Scale (PWBS – Psychological Well-Being Scale), developed by Ryff, C.D. (1989) evaluated and validated by Abbott et al., 2006.*
- *Diener E.'s Satisfaction with Life Scale (SWLS); 1985*
- *DASS-21 (Depression Anxiety Stress Scale) developed by Lovibond and Lovibond, 1995.*

Statistical processing was performed with IBM SPSS v.20 statistical software. Correlation between scores was investigated by applying the Spearman rank correlation coefficient, calculating the Spearman correlation coefficient ( $\rho$ ) between the variables considered in the study. The statistical significance level was 5% (corresponding to a 95% confidence interval).

**RESULTS**

The comparative analysis between male and female, and the correlational analysis of the data (for the variables considered in the study) were carried out, with the following results:

- The comparative analysis of the scores obtained for the recorded variables, depending on the gender of the participants, can be seen in Table 1.

Table 1. Results of the score comparison, by gender, for the study variables

Score	Total (N=82)	Female (N=64)	Male (N=18)	P value
PWBS_A_E_G_R_P_S	4.35 ± 0.783	4.275 ± 0.772	4.619 ± 0.784	0.49

	4.357 (3.81 – 5.048)	4.214 (3.774 – 4.881)	4.75 (3.929 – 5.309)	
<b>SWLS</b>	4.834 ± 1.322 5 (3.8 – 6)	4.788 ± 1.343 5 (3.8 – 5.8)	5 ± 1.267 5.2 (4.4 – 6)	0.114
<b>DASS_STRESS</b>	1.232 ± 0.632 1.143 (0.857 – 1.571)	1.337 ± 0.611 1.286 (1 – 1.643)	0.857 ± 0.576 0.857 (0.429 – 1.286)	<b>0.006**</b>
<b>DASS_ANXIETY</b>	0.831 ± 0.633 0.714 (0.286 – 1.286)	0.949 ± 0.624 0.857 (5 – 1.286)	0.413 ± 0.482 0.214 (0 – 0.714)	<b>0.001**</b>
<b>DASS_DEPRESSION</b>	0.852 ± 0.646 0.714 (0.286 – 1.286)	0.951 ± 0.659 0.857 (0.429 – 1.357)	5 ± 0.458 0.429 (0.143 – 0.714)	<b>0.006**</b>

\*\* highly statistically significant differences

The results obtained show statistically significant differences between female and male participants for stress, anxiety and depression.

Regarding psychological well-being and satisfaction with life, no statistically significant differences were observed between subjects of different genders.

- For the correlational analysis, the bivariate correlation was used, calculating the Spearman coefficient (rs) between stress, anxiety, depression and each dimension of psychological well-being. For a unified view, Table 2 lists the values of the Spearman correlation coefficient for all the variables evaluated in the present study (satisfaction with life, psychological well-being, stress, anxiety and depression), correlated two by two.

Table 1. Spearman's coefficient (rho) values for all variables assessed in the study (SWLS, PWBS, Stress, Anxiety and Depression), pairwise correlated

		SWLS	PWBS_ A_E_G_R_P_S	DASS_STRESS	DASS_ANXIETY	DASS_DEPRESSION
SWLS	Correlation coefficient R (Spearman)	1.000	.722**	-.520**	-.459**	-.620**
	p (bidirectional test)	.	<0.001	<0.001	<0.001	<0.001
	N	82	82	82	82	82
PWBS_ A_E_G_R_P_S	Correlation coefficient R (Spearman)	0.722**	1.000	-.580**	-.564**	-.668**
	p (bidirectional test)	<0.001	.	<0.001	<0.001	<0.001
	N	82	82	82	82	82
DASS_STRESS	Correlation coefficient R (Spearman)	-.520**	-.580**	1.000	.767**	.739**
	p (bidirectional test)	<0.001	<0.001	.	<0.001	<0.001
	N	82	82	82	82	82
DASS_ANXIETY	Correlation coefficient R (Spearman)	-.459**	-.564**	.767**	1.000	.747**
	p (bidirectional test)	<0.001	<0.001	<0.001	.	<0.001
	N	82	82	82	82	82
DASS_DEPRESSION	Correlation coefficient R (Spearman)	-.620**	-.668**	.739**	.747**	1.000
	p (bidirectional test)	<0.001	<0.001	<0.001	<0.001	.
	N	82	82	82	82	82

\*\* The correlation is statistically significant

Graphical representations of the linearity and direction of the point cloud for the correlated variables in the study, in the form of scatter-plot diagrams, are summarized in Figure 1.

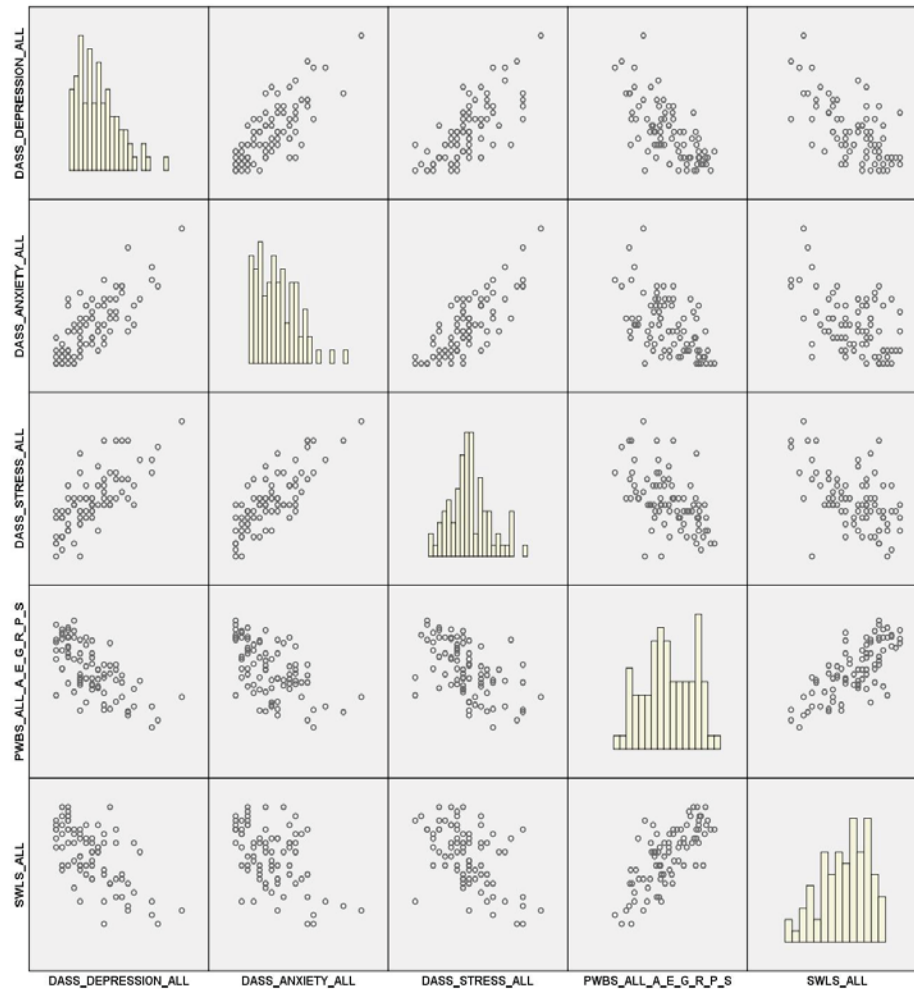


Figure 1. Scatter plot diagrams for the correlations between the pairs of studied variables

## DISCUSSIONS

The results obtained by statistical processing of the data, according to the established methodology, shows that stress seems to have a stronger negative influence on: control over the environment ( $\rho = .631$ ), autonomy ( $\rho = .595$ ) and self-acceptance ( $\rho = .580$ ), at a significance threshold of  $p < 0.01$ . Anxiety correlates significantly negative with the following dimensions: control over the environment ( $\rho = -.586$ ), autonomy ( $\rho = -.585$ ) and self-acceptance ( $\rho = -.517$ ). In addition, the results showed negative values of the correlation coefficient, highly statistically significant, at a significance threshold of  $p < 0.01$ , for the associations between depression and all six dimensions of psychological well-being. The correlation coefficient values between depression and the following dimensions are noted: control over the environment ( $\rho = -.732$ ), self-acceptance ( $\rho = -.661$ ), purpose in life ( $\rho = -.600$ ) and autonomy ( $\rho = -.586$ ), showing the highly statistically significant negative influence that depression has on the four dimensions of the state of PWB.

The results obtained in the present study, regarding the level of correlation between stress, anxiety and depression with psychological well-being, in medical students, coincide with those obtained by other researchers, in similar studies [10, 11]. Tran et al. [10] conducted a study in 2019-2020 on medical students at the University of Geneva and found that final-year students reported lower academic satisfaction, and were significantly more stressed,

anxious, and depressed than their first-year counterparts. In addition, female students reported significantly higher levels of stress and anxiety than male students. These data are supported by the results of the present study, in which highly statistically significant differences were obtained between female and male participants for stress, anxiety and depression.

Our results showed a positive correlation between psychological well-being and satisfaction with life. The very high positive values of the correlation coefficient, for the relationship between satisfaction with life and the dimensions of PWB: self-acceptance ( $\rho = .816$ ), control over the environment ( $\rho = .726$ ) and positive relationships with others ( $\rho = .613$ ), at a  $p < 0.01$  level (2-tailed). The results obtained in the present study are consistent with those of other authors who approach subjective well-being (SWB) and psychological comfort as a unitary approach. Thus, Ryff and Keyes [12], as early as 1995, analysed data from several studies that investigated the associations between PWB and SWB. According to these authors, moderate associations were found between two SWB scales (self-acceptance and control over the environment) and measures of happiness and life satisfaction. Rivas et al. cited by Mamani-Benito et al. [13], found significant relationships between the dimensions of psychological well-being and life satisfaction, highlighting that the dimensions of self-acceptance and environmental control predict satisfaction in young adults. On the other hand, positive relationships with others have a highly significant positive correlation when entering a new social group, and life purpose appears to be a significant predictor in the last year of studies. The results of the present study support this integrative approach of the two aspects of well-being. All dimensions of PWB correlate positively with satisfaction with life. In particular, individuals who have the ability to manage their own lives as well as those around them, who display a clear understanding of the purpose of life, a sense of meaning and intentionality, with a positive attitude and self-acceptance and good interpersonal skills, are happier. This fact suggests that subjects who tend to report higher levels of psychological comfort also tend to report feeling more positive affect and less negative affect, and to rate their life satisfaction more positively.

The results of this study are consistent with those of other authors. Serin et al. [14], reported for the student population in Cyprus that the higher the depressive and anxious manifestations, the more they tend to self-assess their life as unsatisfactory. Samaranayake and Fernando [15] observed that, among medical students in New Zealand, depression was associated with low levels of life satisfaction and psychological well-being, with the presence of depression being more common in students of female gender. Sahin and Tuna [16], obtained negative correlations between depression and anxiety with the variable satisfaction in life, and Duong [17], observed that fear and anxiety reduced the level of life satisfaction among students.

Moreover, compared to non-medical students, stress levels have been observed to be higher in medical students than non-medical students, as reported in multiple studies [28-20]. In a systematic review that analysed 40 selected articles, Dyrbye et al. [21] highlighted that they found a very high prevalence of stress, anxiety and depression in medical students compared to the general population, which considerably reduced the level of psychological well-being and life satisfaction.

#### *Research limitations and practical implications*

One of the limitations of the present study is the relatively small size of the sample (82 subjects). Being a self-administered test, it is likely to provide subjective data or desirable answers. Moreover, the structure of the sample was unbalanced, in terms of the gender of the participants - the sample included 64 female and 18 male subjects.

Another direction of investigation could be to study the differences regarding the relationship between the variables, for the participants who come from the urban

environment compared to those who come from the rural environment. In addition, the presence of chronic general conditions or recent unpleasant events, with great emotional impact, can constitute third variables that can influence the relationships between the analysed variables.

As practical implications, medical academic institutions should develop and implement stress, anxiety and depression management programs developed for medical and nursing students. Such programs may include, for example, self-hypnosis, meditation, mindfulness-based stress reduction, feedback on various health habits, educational discussions, changes in the length and type of curriculum, changes in the grading system, or music and muscle relaxation therapy before exams to improve academic performance.

## CONCLUSIONS

The present study aimed to identify and evaluate the existing relationships between psychological well-being, satisfaction with life and stress, anxiety and depression in medical students in their last year of studies. Following the analysis and interpretation of the data, for the formulated study hypotheses, the main conclusions that can be drawn from this research are the following:

- Psychological comfort and satisfaction with life are facets of well-being, in a very significant positive correlation, a fact that supports the integrative approach of the two concepts;
- Stress, anxiety and depression negatively influence the level of life satisfaction and psychological well-being, in the population of final year medical students.

## REFERENCES

1. Motahedi S, Aghdam NF, Khajeh M, et al. Anxiety and depression among healthcare workers during COVID-19 pandemic: A cross-sectional study. *Heliyon*. 2021 Dec;7(12):e08570. doi: 10.1016/j.heliyon.2021.e08570. Epub 2021 Dec 8. PMID: 34901484; PMCID: PMC8653403.
2. Aloufi MA, Jarden RJ, Gerdtz MF, Kapp S. Reducing stress, anxiety and depression in undergraduate nursing students: Systematic review. *Nurse Educ Today*. 2021 Jul;102:104877. doi: 10.1016/j.nedt.2021.104877. Epub 2021 Mar 18. PMID: 33905898.
3. Deng Y, Ye B, Yang Q. COVID-19 Related Emotional Stress and Bedtime Procrastination Among College Students in China: A Moderated Mediation Model. *Nat Sci Sleep*. 2022 Aug 22;14:1437-1447. doi: 10.2147/NSS.S371292. PMID: 36033906; PMCID: PMC9416325.
4. Vlad R, Golu F, Toma A, et al. Depression And Anxiety In Romanian Medical Students: Prevalence And Associations With Personality, *FARMACIA*, 2020;68(5):944-949 <https://doi.org/10.31925/farmacia.2020.5.24>
5. Dendle C, Baulch J, Pellicano R, Hay M, Lichtwark I, Ayoub S, Clarke DM, Morand EF, Kumar A, Leech M, Horne K. Medical student psychological distress and academic performance. *Med Teach*. 2018;40(12):1257-1263. doi: 10.1080/0142159X.2018.1427222. Epub 2018 Jan 21. PMID: 29355074.
6. Pacheco JP, Giacomini HT, Tam WW, Ribeiro TB, Arab C, Bezerra IM, Pinasco GC. Mental health problems among medical students in Brazil: a systematic review and meta-analysis. *Braz J Psychiatry*. 2017;39(4):369-378. doi: 10.1590/1516-4446-2017-2223. Epub 2017 Aug 31. PMID: 28876408; PMCID: PMC7111407.
7. Greenfield EA, Vaillant GE, Marks NF. Do formal religious participation and spiritual perceptions have independent linkages with diverse dimensions of psychological well-being? *J Health Soc Behav*. 2009;50(2):196-212. doi: 10.1177/002214650905000206. PMID: 19537460; PMCID: PMC2723716.

8. World Health Organization. Depression and Other Common Mental Disorders: Global Health Estimates; World Health Organization: Geneva, Switzerland, 2017 Licence:CC BY-NC-SA 3.0 IGO. <https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf?sequence=1&isAllowed=y>
9. Sandvik E, Diene, E, Seidlitz L. Subjective well-being: The convergence and stability of self-report and non-self-report measures. *Journal of Personality*, 1993;61(3):317-342.
10. Tran NT, Franzen J, Jermann F, et al. Psychological distress and well-being among students of health disciplines in Geneva, Switzerland: The importance of academic satisfaction in the context of academic year-end and COVID-19 stress on their learning experience. *PLOS ONE*, 2022;17(4): e0266612. <https://doi.org/10.1371/journal.pone.0266612>
11. Franzen J, Jermann F, Ghisletta P, et al. Psychological Distress and Well-Being among Students of Health Disciplines: The Importance of Academic Satisfaction. *International Journal of Environmental Research and Public Health*. 2021;18(4):2151. <https://doi.org/10.3390/ijerph18042151>
12. Ryff CD, Keyes CL. The structure of psychological well-being revisited. *J Pers Soc Psychol*. 1995 Oct;69(4):719-27. doi: 10.1037//0022-3514.69.4.719. PMID: 7473027.
13. Mamani-Benito O, Carranza Esteban RF, Castillo-Blanco R, et al. Anxiety and depression as predictors of life satisfaction during pre-professional health internships in COVID-19 times: the mediating role of psychological well-being. *A Cell Press journal, Heliyon*, 2022;8(10):e11025 <https://doi.org/10.1016/j.heliyon.2022.e11025>
14. Serin NB, Serin O, Özbaş FL. Predicting University Students' Life Satisfaction by Their Anxiety and Depression Level. *Procedia-Social and Behavioral Sciences*, 2010;9,579-582. <https://doi.org/10.1016/j.sbspro.2010.12.200>
15. Samaranayake C., Fernando A. Satisfaction with life and depression among medical students in Auckland, New Zealand. *The New Zealand MJ* 2011, 124.12-7.
16. Sahin S, Tuna R. The effect of anxiety on thriving levels of university students during the COVID-19 pandemic. *Collegian*. 2022;29(3):263-70.
17. Duong CD. The impact of fear and anxiety of Covid-19 on life satisfaction: Psychological distress and sleep disturbance as mediators. *Personality and Individual Differences*, 2021, 178, 110869. doi:10.1016/j.paid.2021.110869
18. Moreira de Sousa J, Moreira CA, Telles-Correia D. Anxiety, Depression and Academic Performance: A Study Amongst Portuguese Medical Students Versus Non-Medical Students. *Acta Med Port*. 2018;31(9):454-462. doi: 10.20344/amp.9996. PMID: 30332368.
19. Sheldon E, Simmonds-Buckley M, Bone C, et al. Prevalence and risk factors for mental health problems in university undergraduate students: A systematic review with meta-analysis. *Journal of Affective Disorders*, 2021;287, 282-292. <https://doi.org/10.1016/j.jad.2021.03.054>
20. AlShamlan NA, AlOmar RS, Al Shammari MA, et al. Anxiety and Its Association with Preparation for Future Specialty: A Cross-Sectional Study Among Medical Students, Saudi Arabia. *J Multidiscip Healthc*. 2020;13:581-591. doi: 10.2147/JMDH.S259905. PMID: 32753877; PMCID: PMC7351973.
21. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Acad Med*. 2006 Apr;81(4):354-73. doi: 10.1097/00001888-200604000-00009. PMID: 16565188.