



REVIEW: A Review on the Effect of Anxiety on Academic Performance in Medical and Paramedical Students

Mahdi Shooraj

Student Research Committee, Amol School of Paramedical Sciences, Mazandaran University of Medical Sciences, Sari, Iran.

Seif Ali Mahdavi

Department of Parasitology, Amol School of Allied Medical Sciences, Mazandaran University of Medical Sciences, Sari, Iran.

ARTICLE INFO

Submitted: 24 May 2021

Accepted: 14 Jul 2021

Published: 01 Sep 2021

Keywords:

Academic performance;

Anxiety;

Medical students

Correspondence:

Seif Ali Mahdavi, Department of Parasitology, Amol School of Allied Medical Sciences, Mazandaran University of Medical Sciences, Sari, Iran.

Email: seifalimahdavi@gmail.com

ORCID: 0000-0003-1522-7796

Citation:

Shooraj M, Mahdavi SA. A Review on the Effect of Anxiety on Academic Performance in Medical and Paramedical Students. *Tabari Biomed Stu Res J.* 2021;3(3):38-44.

 10.18502/tbsrj.v3i3.6926

ABSTRACT

Introduction: Test anxiety is one of the most important phenomenon and main concerns in educational contexts all over the world that influence on students' presentation. Likewise, apprehension among medical and paramedical students deserves superior consideration due to its important implications. Medical and paramedical universities are known as a stressful situation that often has an undesirable result on students' educational enactment, physical health, and psychosocial health. The purpose of this investigation is to review the existing studies on the prevalence of depression and anxiety among medical and paramedical students attending the universities in Iranian or foreign academic context, to investigate different outcomes in this regard.

Material and Methods: In the current study, the databases of PubMed, Google Scholar, SID, and Magiran were investigated from 1990 to 2021 and related articles were reviewed.

Results: The findings revealed that students' gender, academic level of study and self-efficacy are effective factors influencing the students' test anxiety.

Conclusion: It seems crucial to take an effective action for managing anxiety in medical and paramedical academic context. Consequently, the current investigation is useful for practitioners and educational administrators in medical education context.

Introduction

Anxiety is a communal prodigy that creates a worldwide reason of poor theoretical enactment among undergraduates. It is a certain point in human life's that effects person's achievement in many circumstances. Additionally, normal level of apprehension is beneficial in supporting people hardworking and motivating them being accountable for the task they have to perform during their lifetime (2, 3). Anxiety is an undesirable and unclear sense (4). High level of apprehension hinders students' cerebral and physical well-being and it has undesirable influence on their

private, societal, professional, and scholastic enactment (5). Concerning this issue, most students face problems like adjustment to novel context and changing the practices of life at the beginning of their study in academic settings. Further, they will experience a great challenge to accomplish the uppermost level of academic enactment which can affect students' presentation and might result in stress, depression and anxiety (6).

Most of the time students have a great likelihood of facing anxiety throughout final exam. These days anxiety disorders are

increasing among undergraduate students (7). Current inquiries on anxiety and associated grounds presented that apprehension disorders are also dominant in foreign society and test anxiety is considered as one of the most important factor concerning anxiety disorder (8). This type of apprehension most of the time will deteriorate students' test taking skill. Likewise, it will decrease students' ability to show their understanding concerning the content of the course being assessed, therefore leading to reduced enactment in the examination that in turn effects the test marks and total results (9). Concerning Iranian setting, every year thousands of Iranian high school students would be accepted to study in university context. In this case, students may suffer from mental pressures of being away from the family members, living in dormitories, studying new term in a university setting or they may experience fear of academic failure during academic period. In this sense, medical students should also deal with the stress of clinical situations. These stressful circumstances can obstruct learning and effect efficacy of the students that finally make it challenging to accomplish the dominant objective of higher education (10). Thus, medical and paramedical students are those parts of the society that suffer from anxiety conditions. Besides, stress can decrease the academic efficacy of those students and they may addict to smoking or drug abuse to deal with their stress. Consequently, those students experiencing high levels of stress are not self-assured and fail to accomplish their learning (11).

Methods

In this review, the data were gathered using keywords and phrases of anxiety, academic performance, medical and paramedical students and a combination of those searching in Pubmed, Google Scholar, Embase and SID (Scientific Information Database) from 1990 to 2021. The results of the studied articles were summarized.

Results

Slight anxiety throughout examinations is essential that will aid students to be interested and learn theoretical content. Increasing students' anxiety will not assist them to accomplish better rather it will affect their educational presentation undesirably (12). The psychosomatic signs in students before a test comprises restlessness, uncommon body actions, challenges in thinking and concentration, insomnia, tiredness, muscle contraction, stomachache, and shocks (13). These signs have undesirable effects on undergraduate lives and occupational development (14). Most of medical students, experience high anxiety for final exam although their grades are good during the term (15). In this regard, nursing students have approximately double rate for moderately high to high test anxiety in contrast to the general public and high school students (16). Nursing curriculums can be regarded as highly stressful contexts. Nursing students are under pressure for taking various tests throughout their college and professional lives. Nursing apprentices have clinical assessments, which is extremely stressful, that requires more tuition before facing the clinical examinations (17). Additionally, nursing learners are under the stress that even a slight imprecision causes fatal outcome to a patient and impact student's personal occupation (16). In addition, nursing learners are engaged in higher levels of test anxiety than others, particularly due to struggle to balance several tasks such as career modification and family accountabilities with the extensive learning hours that are compulsory for academic achievement (18). Through passage of time these stressors may place learner in chronic stress. In a recent investigation, the association between test apprehension and academic attainment of nursing students have been examined and the findings showed negative association between test anxiety scores of undergraduate nursing students and their educational level (19).

Related studies in the world

Based on literature review, most students would engage in test anxiety during examination. The significant point here is related to the consequence of apprehension on students' enactment which would generate a challenging situation for students (20). In fact, anxiety is an obstruction on the pathway of several students to gain their actual academic target (21). Several investigations have proven that student's mental well-being is a crucial element of his or her health. Stress and anxiety both play roles in the overall performance of the students. They have shown to have powerful effect on students and their general

academic attainment and enactment in their courses (22, 23).

Investigations revealed that medical students experience a greater level of stress during their undergraduate curriculums (25). High level of stress have an undesirable consequence on cognitive process and education of students in medical universities (26). In the other study, the findings exposed that the level of stress reduced as the year of training increased (27). Moreover, the outcomes of the other investigation revealed that the level of stress would increase gradually throughout the course and it has reached as high as 40% at the end of the medical teaching period (28).

Table 1. Evolution of test anxiety studies over the world

Authors	Year	Main findings
Saravanan C. (1)	2014	The findings revealed main difference between depressed and non-depressed and apprehensive and non-apprehensive students' experience of stressor due to frustration, alteration, and their emotional response to stressors.
Dawood E. (19)	2016	Findings showed statistically significant negative association between test anxiety marks and nursing students' academic level. Findings revealed that undergraduate nursing students in higher educational level experience a smaller amount of test anxiety. Concerning the relationship between test anxiety scores and undergraduate nursing students' age, Pearson's correlation indicated that test anxiety scores decreased when participants age increase.
Alkhalaf A. (22)	2018	The findings revealed that the association of positive effect of PANAS (Positive and Negative Affect Schedule) is significantly and strongly related to GPA (Grade Point Average) on Saudi medical students, whereas negative effect and the TMAS (Taylor Manifest Anxiety Scale) were not observed.
Tsegay L (24)	2019	The results of the study showed the percentage of challenging test anxiety between medical students was 52.30% (95% CI 47.40–57.30). Besides, findings revealed that female participants had a greater level of anxiety (79.75%) than male (33.62%) students.

Related studies in Iranian academic context

Test anxiety is a retort to a condition concerning assessment of a students' enactment. Test anxiety can be related with underprivileged academic presentation (29). The association between test anxiety and educational enactment of female nursing students of Najafabad Islamic Azad University have been investigated by Yazdani (29). The mean of students' test anxiety and theoretical recital scores were 18.16 and 14.53. The findings showed statistically significant contrary association between test anxiety and academic enactment of nursing students ($r = -0.213$, $p = 0.007$) in university context. Researchers highlighted that the increased levels of anxiety would result in the lower

enactment of students for the test (34). Concerning this issue self-efficacy and learners' gender are directly related to the students' academic performance (34). In their cross-sectional study, 233 paramedical students of Qom University contributed in their study. The researchers used anxiety test record and the self-efficacy measure as a means of collecting data. The outcome revealed that those students with greater self-efficacy would have lower test apprehension. Besides, reinforcement of this factor among students led to the improved enactment of students during exam. On the other hand, some researchers applied standard questionnaire (TAI) (Test Anxiety Inventory) to evaluate dental students' test anxiety level in Ahvaz university context (37). The participants of the

study were 160 students who were freshmen students in Ahvaz University. 38.8% of them were male and 61.2% were female. Likewise, 93.8% of them were single and rest of them were married. The students' test anxiety was evaluated in four stages: severe anxiety (9.8%), moderate anxiety (32.7%), mild anxiety (37.5%) and non-anxiety (19.5%). The

findings showed no significant association between gender of participants, contentment about the field of study, being native or non-native, age and test anxiety ($p>0.05$). Though, the outcome revealed a significant association between the approval of study major and the level of test anxiety ($p=0.04$).

Table 1. Evolution of test anxiety studies over the world

Author	Year	Main findings
Hassanbeigi A. (30)	2011	The findings revealed that lack of time management and procrastination, concentration and memory factors, study aids and note taking were the main reasons of underachievement.
Farooqi YN. (31)	2012	The outcomes showed that the male medical students achieved statistically significant higher GPAS in comparison with the female medical students. Furthermore, results showed important negative association between test anxiety and academic enactment of medical students.
Yazdani F. (29)	2012	The findings showed statistically significant reverse relationship between test anxiety and academic performance of nursing students in Islamic Azad University context.
Ashouri FP. (32)	2015	Investigation of the association between sleep disorder and academic enactment indicated the association of PSQI marks with marital status, habitat, physical activity, and academic performance.
Dolati K. (23)	2016	The review revealed that having second jobs, residing in a dormitory, low education of the parentages, extensive break between getting diploma and university entrance, gender, age, lack of scheduling, skills, and absenteeism during the lessons are the chief instructive obstacles among medical students caused underachievement.
Salar AR. (33)	2016	The findings showed the association among gender, test anxiety and self-efficacy was not statistically significant. Further, it showed a converse association between the students' self-efficacy and test apprehension.
Asayesh H. (34)	2018	The findings of this study showed that the increasing of self-efficacy score was associated with the decreasing of the of test anxiety. Besides, the coincidental of test anxiety among the female students was higher than males.
Yusefzadeh, H. (35)	2019	The findings suggested that the level of anxiety assessment in the intervention cluster due to students' contribution and vigorous presence in class activity was lesser than the control group at the end of the term.
Arjmandi E. (36)	2019	The outcome revealed that there was no significant difference between native and non-native students concerning depression and anxiety scores in university context. Besides, the findings revealed that the degree of depression and anxiety in female was greater. Moreover, findings highlighted that higher-level fields of education had a significant effect on decreasing the depression and anxiety.

Implication of the study to the educational researchers

Based on literature review, it seems crucial to take an effective measure for managing anxiety of medical and paramedical students in Iranian university context. Likewise, more research is needed to focus on incorporating students' interaction in class setting during educational period. The results of the investigations credited to several factors namely the contexts of the study, age of participants, marital status of students, native and nonnative learners, educational level and

the extent of the treatments. Therefore, variety of components can affect the outcomes of the medical and paramedical students' achievement in educational context. Following suggestions are provided for future investigation.

- a) The effect of dynamic classroom discourse on students' anxiety level and their performance on final test.
- b) The effect of students' mutual cooperation in academic context and its effect on students' anxiety level and their

educational achievement.

- c) The consequence of students' cognitive improvement and the development of cultural hybrid identities in dormitory setting on students' anxiety level and their final attainment.

Conclusion

Anxiety is one of the most common excitable, mood and emotional reactions perceived as a general exhilarating and vague feeling of worriedness with physical symptoms of dyspnea, tachycardia, etc. Ongoing anxiety may cause other psychological disorders. Various studies have shown that anxiety disorder is highly prevalent in students. University policy improvement concerning conducting standardized tests, considering the atmosphere of the examination's session, training students for exam appropriately, developing self-efficacy of individual students, promoting students' contribution and dynamic attendance in class activity and enabling students to achieve a sense of self-efficacy can aid to decrease the test anxiety. Likewise, due to the high pervasiveness of test anxiety among medical and paramedical students, it is suggested that more studies be conducted in this realm to pinpoint the features connected with it and deliver some approaches for handling the anxiety in academic settings.

Acknowledgments

The present study has been approved by the Ethics Committee of Mazandaran University of Medical Sciences (IR.MAZUMS.REC.064). The authors of the article express their gratitude to the Vice-Chancellor of Research and Technology and Student Research Committee of Mazandaran University of Medical Sciences for supporting this project.

Conflicts of interest

Authors declare no conflict of interests.

Authors' contributions

All authors have intellectually committed to the study design and process. The final manuscript was revised and accepted by all authors.

Funding

Mazandaran University of Medical Sciences.

References

1. Saravanan C, Wilks R. Medical students' experience of and reaction to stress: the role of depression and anxiety. *The scientific world journal*. 2014;2014:1-8.
2. Kahan LM. The correlation of test anxiety and academic performance of community college students: Capella University; 2008.
3. Donnelly RC. Embedding interaction within a blend of learner centric pedagogy and technology. *World Journal on Educational Technology*. 2009;1(1):6-29.
4. Asadullapoor AF. L. & Gharaee, B. Metacognitive anxiety and the immediate and delayed judgment of learning. *Journal psychiat clinic psychol*. 2010;16(4):412-19.
5. Zaharakar K. *Stress Consultant*. 1 ed: Tehran: Bal University Publication; 2008.
6. Shamsuddin K, Fadzil F, Ismail WSW, Shah SA, Omar K, Muhammad NA, et al. Correlates of depression, anxiety and stress among Malaysian university students. *Asian journal of psychiatry*. 2013;6(4):318-23.
7. Leta S. Depression Rates among College Students on the Rise. *The Daily California*. 2001;3(2):189-92.
8. Amiri-Majd M, Shahmoradi A. Effects of cognitive-behavioral therapy in reducing anxiety. *Behav Sci*. 2008;7(3):53-64.
9. Markman U, Balik C, Braunstein-Bercovitz H, Ehrenfeld M. The effect of nursing students' health beliefs on their willingness to seek treatment for test anxiety. *Journal of Nursing Education*. 2011;50(5):248-52.
10. Tabibi M, Ahmari Tehran H, Soltani Arabshahi SK, Heidari S, Abdi Z, Safaeipour R. The association between spiritual health and academic achievement in medical students of Qom University of Medical Sciences, 2011. *Qom University of Medical Sciences Journal*. 2013;7(2):72-8.
11. Polychronopoulou A, Divaris K. A longitudinal study of Greek dental students' perceived sources of stress. *Journal of dental education*. 2010;74(5):524-30.

12. Coon D, Mitterer JO, Martini TS. Introduction to psychology: Gateways to mind and behavior. Cengage Learning; 2010.
13. Porto A. Definitions and classification of NANDA nursing diagnoses. *NANDA International*. 2013;68(4):603-9.
14. Ferreira CL, de Almondes KM, Braga LP, Mata ÁNd, Lemos CA, Maia EMC. Evaluation of trait and state anxiety in first year students. *Ciencia & saude coletiva*. 2009;14(3):973.
15. Akbaryboorang M, Aminyazdi S. Test-Anxiety and Self-Efficacy: A Study on the Students of Islamic Azad University, Branch of Southern Khorasan. *Quarterly of Horizon of Medical Sciences*. 2009;15(3):70-6.
16. Driscoll R, Evans G, Ramsey G, Wheeler S. High Test Anxiety among Nursing Students. Online submission. 2009.
17. Mahat G, editor *Stress and coping: junior baccalaureate nursing students in clinical settings*. Nursing forum; 1998: Wiley Online Library.
18. Beggs C, Shields D, Janiszewski Goodin H. Using guided reflection to reduce test anxiety in nursing students. *Journal of Holistic Nursing*. 2011;29(2):140-7.
19. Dawood E, Al Ghadeer H, Mitsu R, Almutary N, Alenezi B. Relationship between Test Anxiety and Academic Achievement among Undergraduate Nursing Students. *Journal of Education and Practice*. 2016;7(2):57-65.
20. Javanbakht N, Hadian M. The effects of test anxiety on learners' reading test performance. *Procedia-Social and Behavioral Sciences*. 2014;98:775-83.
21. Malik M, Akhter M, Fatima G, Safder M. Emotional intelligence and test anxiety: a case study of unique school system. *Journal of Elementary Education*. 2013;23(2):49-56.
22. Alkhalaf A. Positive and negative affect, anxiety, and academic achievement among medical students in Saudi Arabia. *Int J Emerg Ment Health Hum Resil*. 2018;20:397.
23. Dolati K, Hamadiyan H, Pour Ashouri F, Rasekhi S. Academic and Socio-demographic Causes of Medical Student's underachievement in Iranian Medical Schools: A Systematic Review. *International Journal of Medical Research & Health Sciences*. 2016;5(7S):385-90.
24. Tsegay L, Shumet S, Damene W, Gebreegziabhier G, Ayano G. Prevalence and determinants of test anxiety among medical students in Addis Ababa Ethiopia. *BMC medical education*. 2019;19(1):1-10.
25. Rosal MC, Ockene IS, Ockene JK, Barrett SV, Ma Y, Hebert JR. A longitudinal study of students' depression at one medical school. *Academic medicine: journal of the Association of American Medical Colleges*. 1997;72(6):542-6.
26. Dahlin M, Joneborg N, Runeson B. Stress and depression among medical students: A cross-sectional study. *Medical education*. 2005;39(6):594-604.
27. Abdulghani HM, AlKanhhal AA, Mahmoud ES, Ponnampereuma GG, Alfaris EA. Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia. *Journal of health, population, and nutrition*. 2011;29(5):516.
28. Niemi P, Vainiomäki P. Medical students' distress—quality, continuity and gender differences during a six-year medical programme. *Medical teacher*. 2006;28(2):136-41.
29. Yazdani F. Test anxiety and academic performance in female nursing students. *Quarterly Jouranal of*. 2012.
30. Hassanbeigi A, Askari J, Nakhjavani M, Shirkhoda S, Barzegar K, Mozayyan MR, et al. The relationship between study skills and academic performance of university students. *Procedia-Social and Behavioral Sciences*. 2011;30:1416-24.
31. Farooqi YN, Ghani R, Spielberger CD. Gender differences in test anxiety and academic performance of medical students. *International Journal of Psychology and Behavioral Sciences*. 2012;2(2):38-43.
32. Ashouri FP, Rasekhi S. A review on medical students' mental health problems and proposed solutions. *Disease and Diagnosis*. 2015;4(1):23-31.
33. Salar AR, Baghaei R, Zare S, Salar E. The Survey of the Self-efficacy among Urmia Medical Sciences University Students in 2016. *Indian Journal of Public Health Research & Development*. 2016;7(4).
34. Asayesh H, Hosseini MA, Sharififard F, Taheri Kharameh Z. The relationship between self-efficacy and test anxiety among the Paramedical students of Qom University of Medical Sciences. 2018.
35. Yusefzadeh H, Iranagh JA, Nabilou B. The effect of study preparation on test anxiety and performance: a quasi-experimental study. *Advances in medical education and practice*. 2019;10:245.
36. Arjmandi E, Horri F, Navaei P. Comparison of Depression and Anxiety Disorders among Native and Non-native Students of Islamic

Azad University of Medical Sciences in Tehran.
Canon Journal of Medicine. 2019;1(1):21-6.

37. Gilavand A, Moezzi M, Gilavand S. Test Anxiety in Dental Students: A Study at the Ahvaz Jundishapur University of Medical Sciences, Iran. Journal of Research in Medical and Dental Science. 2019;7(1):108-13.