

# Medical Students Counteract with Test Anxiety: victory or defeat?

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## ABSTRACT

**Background:** One specific type of anxiety is test anxiety, which involves worry, stress, lack of confidence, fear of failure, or confusion that a person may feel before, during, or after an exam. The present study aimed to investigate the anxiety level of medical students of Azad University of Medical Sciences during their critical exams. **Methods:** The present cross-sectional study was conducted on medical student of the Islamic Azad University, Mashhad Branch, Mashhad, Iran who were in the internship stage by census sampling method. State-Trait Anxiety Inventory (STAI) questionnaire was applied to measure the participants before their pre-internship written exam and Objective Structured Clinical Examination (OSCE). **Results:** There was no statistically significant difference in the mean manifest anxiety score between genders in the clinical competency exam ( $p=0.17$ ). Similarly, there was no significant difference in the mean manifest anxiety score between genders in the written exam ( $p=0.63$ ). However, females presented higher levels of anxiety in both written exam ( $47.7\pm 11.4$ ) and OSCE ( $42.0\pm 9.6$ ). **Conclusions:** OSCE not only does not cause more anxiety in the student than the written test but also less anxiety due to the direct interaction and proper communication between the examiner and the student is experienced.

**Keywords:** Medical Education, Test Anxiety, OSCE, Exam

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## INTRODUCTION

Anxiety is a psychological occurrence that is universal and experienced by everyone at some point in their lives. While anxiety can negatively impact our performance and lead to mistakes, a certain level of anxiety is essential for being diligent and responsible (1). Medical students face higher levels of stress compared to students in other fields, and anxiety is a prevalent issue among them (2). The issue of anxiety among medical students deserves increased attention due to the potentially significant consequences it can have. One specific type of anxiety is test anxiety, which involves worry, stress, lack of confidence, fear of failure, or confusion that a person may feel before, during, or after an exam. It is characterized by physical, mental, and behavioral symptoms (3, 4). While some levels of test anxiety can motivate students to work harder and study better, high levels of this anxiety can lead to psychological distress, poor performance, underachievement, and loss of motivation. Test anxiety is not solely caused by personal factors such as inadequate studying or test-taking skills (5); the organization's performance can also contribute to it. Previous studies have shown that medical students tend to have higher levels of test anxiety compared to other students because of their higher level of knowledge and professional skills (6, 7).

Studying medicine can lead to various psychological and emotional changes for students and the mental health of students in different fields of study can be influenced by various factors; For example, living in dorms, being far from family, being alone, and encountering a new university environment can all contribute to the mental health challenges faced by students in different fields (8-10). Medical students, like other students, experience common stressors that can negatively impact their mental health. However, due to the unique demands of their lifestyle, medical students are more susceptible to developing mental health disorders and experiencing a lower quality of life (11, 12). A study conducted by Rosal MC et al found that medical students when compared to students with similar mental health statuses, tend to experience increased levels of depression, anxiety, and other mental disorders over time (13).

Obviously, exams are known as one of the most stressful situations which happen for every student, even medical students; previous studies indicated various levels of anxiety in medical students during exams. Despite Mastour et al reporting that approximately 70% of their studied medical students presented moderate to severe levels of anxiety during virtual medical exams (14, 15); some other studies reported even higher or lower levels of

anxiety among medical students in different critical or non-critical exams (16, 17); therefore, the present study aimed to investigate the anxiety level of medical students of Azad University of Medical Sciences during their critical exams.

**MATERIAL AND METHODS**

The present cross-sectional study was conducted in 2015 at the Islamic Azad University, Mashhad Branch, Mashhad, Iran. The study population consisted of all medical students in the internship stage by census sampling method. All procedures were in line with the Ethics Committee of the Islamic Azad University, Mashhad Branch, Mashhad, Iran, and all respondents provided informed consent. The forms were gathered with an anonymous identification code.

The data were collected through a checklist that included demographic characteristics and Persian versions of the State-Trait Anxiety Inventory (STAI) questionnaire. The STAI questionnaire is a self-report measure used to assess both manifest and latent anxiety. It consists of 40 questions divided into two sections. The first section assesses the individual’s current anxiety state and feelings during the response, referred to as “manifest anxiety.” It includes 20 questions with a rating scale (not at all, somewhat, moderately, very much), with scores ranging from zero to three assigned to each option. The second section of the STAI questionnaire also consists of 20 questions (questions 21 to 40). Each question in this section has a rating scale (almost never, sometimes, often, almost always) and aims to measure trait anxiety and evaluate the individual’s general and usual feelings of anxiety, referred to as “latent anxiety.” Similarly, scores ranging from zero to three were assigned to each option. In the Spielberger questionnaire, the positive and negative wording of the questions was adjusted to obtain accurate responses from the students. For certain questions (1, 2, 5, 8, 10, 11, 15, 16, 19, 20, 21, 23, 26, 27, 30, 33, 34, 36, 39), the scores were reversed. The positive and negative scores obtained for both sections (manifest and latent anxiety) were calculated separately, and participants were categorized into one of three groups: mild anxiety (scores 0 to 20), moderate anxiety (scores 21 to 40), and severe anxiety (scores 41 to 60) (18).

Statistical analyses were performed in SPSS software (version 23). Categorical variables were demonstrated using frequency and percentage, and the quantitative variables were presented as mean±SD. The normality assumption was met (checked via the Kolmogorov-Smirnov normality test); therefore, an independent sample t-test was run. All tests were two-tailed at a 5% significance level.

**RESULTS**

The findings of this study of 80, as 70 (86.4%) of the participants were female and 11 (13.6%) were male, presented that the average age of the students was 24.8±0.8 years.

The mean and standard deviation of the latent anxiety score before the written exam were 42±9.6, and the mean and standard deviation of the latent anxiety score before the clinical competency exam were 44±10.2. There was no statistically significant difference in the mean latent anxiety score between the exams (p=0.2).

The manifest anxiety score in the written exam was 55.5±7.8, and the manifest anxiety score in the clinical competency exam was 44.7±11.3, showing a statistically significant difference between the exams (p=0.0001) (Table 1).

There was no statistically significant difference in the mean manifest anxiety score between genders in the clinical competency exam (p=0.17). Similarly, there was no significant difference in the mean manifest anxiety score between genders in the written exam (p=0.63) (Table 2).

**Table 1.** Characteristics of the study participants

Variable	N (%)	Mean±SD
Age (years)	-	23.88±0.837
Gender	Male	11 (13.6)
	Female	70 (86.4)
Latent Anxiety Score	Before Written Exam	42±9.6
	Before OSCE	44±10.2
Manifest Anxiety Score	Before Written Exam	55.5±7.8
	Before OSCE	44.7±11.3
		P= 0.2
		P= 0.0001

**Table 2.** Relationship between gender and the anxiety score

Variable (Anxiety Score)	Mean±SD	P-value
Before OSCE	Male	40.3±9.9
	Female	42.0±9.6
Before Written Exam	Male	42.7±10.8
	Female	47.7±11.4
		0.17
		0.63

**DISCUSSION**

In the present study, the comparison of trainees’ anxiety in the comprehensive pre-internship test and the pre-internship clinical competency test at the Azad University of Mashhad, Mashhad, Iran was investigated. The findings showed that the level of anxiety is significantly lower on the OSCE test than on the written test; however, In previous studies, students believed that the practical assessment of OSCE with the direct supervision of the evaluator increases their anxiety (19).

Test anxiety is a common psychological phenomenon that affects students of all ages and academic levels. It is characterized by feelings of excessive worry, fear, and apprehension before, during, or after an examination (20). This condition can significantly impair cognitive functioning, leading to poor performance and academic underachievement. Test anxiety is believed to be caused by a combination of factors, including individual temperament, past experiences, and the high-stakes nature of exams. Physiologically, it is associated with the activation of the body’s stress response system, resulting in increased heart rate, rapid breathing, and muscle tension (14). Additionally, test anxiety has been linked to negative



cognitive processes such as intrusive thoughts, self-doubt, and impaired concentration. Understanding the underlying mechanisms and effects of test anxiety is crucial for educators and mental health professionals to develop effective interventions and support strategies to alleviate its detrimental impact on students' academic success and overall well-being (21).

Walsh et al stated that 90% of students consider the objective structured clinical evaluation method with the usual method to be a stressful method (22). In another study by Berand et al, it was found that the usual form of the OSCE test has more tension (23); although, Hasan et al. also found revealed that in OSCE evaluation with the usual method, the student immediately understands the defects of his work in the professor's feedback and tries to fix the defects, and therefore his anxiety is reduced (24). Additionally, Faryabi et al. found that 34.8% of students had a positive opinion about the usefulness of objective structured clinical evaluation with its usual method, and 78.6% declared it stressful (25). This is despite the fact that other studies have evaluated the presence of the evaluator in the OSCE test stations as effective and have stated that the direct presence of the evaluator not only helps the students to determine their weak points but also helps the evaluator to find out the abilities of the students (26).

In the present study, during the investigation, the level of anxiety in the OSCE test was significantly lower, which is consistent with the results of some previous studies. Perhaps it can be said that the difference in the results of various studies indicates that students feel anxious due to the lack of information and knowledge about the way to conduct the OSCE test. It depends on what should be considered in comparing the results. In this study, it can be seen that there is more anxiety in the comprehensive pre-internship exam than in the clinical competency exam in connection with the fact that if the exam is not accepted, it is equivalent to a six-month break during the student's education.

### LIMITATION

Our study was limited to a number of students who were investigated at one point in time, therefore, the application of the results for its generalization is limited. Among the other limitations of this study, we can point out the mental state of the person at the time of completing the questionnaire, the time spent, and honesty in answering, which are the basic conditions of the health and safety of the research, and some factors may have distorted this issue. Similar studies in this case were also very few and it is suggested that a wider and more comprehensive study be conducted in this case.

### CONCLUSION

The findings of this study show that, contrary to previous belief, the clinical competency test, which is held in the form of OSCE, not only does not cause more anxiety in the student than the written test but also less anxiety due to the direct interaction and proper communication between the examiner and the student is experienced.

### CONFLICT OF INTERESTS:

None.

### ABBREVIATIONS

STAI; State-Trait Anxiety Inventory, OSCE; Objective Structured Clinical Examination.

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