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Research Article

Prevalence and Correlation of Stress and Performance in OSCE amongst Medical Students

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ABSTRACT
Background: Objective Structured Clinical Examination (OSCE) is a powerful approach in medical education that is used to evaluate clinical skills, communication, decision-making and professional behavior. OSCE is believed to be a structured and fair assessment technique, but a significant number of students are stressed out in the lead-up to and during the OSCE, which can impact their performance.
Objective: To assess student perceptions of OSCE-related stress and its effect on performance among medical students.
Methods: The study was descriptive cross-sectional study which was conducted at Northwest School of Medicine, Peshawar, from January 2025 to June 2025. Non-probability consecutive sampling was used to include a total of 82 medical students. A structured questionnaire was used to gather data which included the following items: Student demographics, prior OSCE experiences, perceived stress level, causes of OSCE stress, OSCE-related symptoms, perceived impact of stress on performance, and student opinions regarding OSCE. Data was analysed using SPSS version 26. Categorical data: Frequencies and percentages were calculated. Continuous data: mean and SD were calculated. Where appropriate, a chi-square test and Pearson correlation were used and a p value of ≤ 0.05 was regarded as statistically significant.
Results: Among 82 students, moderate stress was reported by 44 (53.7%) students, severe stress by 24 (29.2%), and mild stress by 14 (17.1%). The most common causes of stress were fear of forgetting answers 59 (72.0%), time pressure 55 (67.1%), fear of examiner evaluation 51 (62.2%), lack of confidence 47 (57.3%), and inadequate practice 44 (53.7%). Stress negatively affected performance in 47 (57.3%) students. Poor performance was more common among students with severe stress, and the association between stress level and OSCE performance was statistically significant (p=0.018). Previous OSCE experience was also significantly associated with lower stress levels (p=0.011).
Conclusion: OSCE was perceived as a stressful but useful assessment method by most students. Higher stress was associated with poorer performance, while previous OSCE exposure reduced stress. Mock OSCE sessions, repeated practice, proper orientation, and constructive feedback may help reduce stress and improve student performance.

Keywords: OSCE, medical students, examination stress, student perception, clinical performance, medical education.

INTRODUCTION

Assessment is a crucial aspect of medical education since it can be ascertained whether the students achieved the necessary knowledge, clinical skills, communication skills and professional attitude that are essential to patient care. Assessment in clinical education should not only be theoretical knowledge testing, but also be able to assess the application of students' knowledge in practice. For this purpose, the Objective Structured Clinical Examination (OSCE) has become one of

the most commonly used assessment methods in medical and health professions education (1-3).

OSCE is a semi-simulated clinical assessment carried out by students, having to complete a series of tasks at each of a set number of stations over a fixed period. These activities can involve history taking, physical examination, patient interaction, interpretation of clinical information, procedural skills and clinical decision making. The assessment of each station, which is typically done with the use of a checklist or rating scale, is more standardized and objective. Students are exposed to the same tasks and marking criteria, thus OSCE is more reliable and fair than many traditional clinical examination method(4-6).

Although students benefit from OSCE, it is still considered as a stressful examination. Anxiety can be exacerbated by the pressure to perform certain skills correctly, the time limits, the examination setting, and direct observation by examiners, or fear of getting the skill wrong. Students are sometimes nervous when transferring from one station to another, particularly when they aren't sure what to do at the station or when they think the examiner is on their shoulder. This stress can have an impact on recall, confidence, communication and clinical thinking in the exam (7-9).

The stress during assessment can be beneficial as well as detrimental. While some stress can be beneficial in alerting and motivating students, overstress is detrimental to concentration and thus to performance. OSCE requires students to exhibit knowledge, skills and attitude simultaneously. Thus, they can have difficulty organizing their thoughts, communicating clearly, doing the required work on time and confidently doing clinical procedures. Knowing the student perception of OSCE stress is crucial as it could guide medical colleges in enhancing their assessment practices and thereby support students (10).

Stress can arise from a variety of factors during OSCE examinations, such as lack of experience, unfamiliarity with the OSCE format, inadequate preparation for OSCE examinations, fear of assessment by the examiner, time constraints, and previous poor examination experiences. Students who are new to OSCE may feel more anxious than those who have done OSCE before. Likewise, students who are well oriented, have mock OSCE experience and receive feedback are likely to be more confident and less stressed. Thus it is important to understand the common causes of the stress in OSCE and thereby work towards designing better teaching and assessment procedures to reduce the stress in OSCE (11, 12).

Student perception is an important component in assessing any assessment tool. When the examination is valid and reliable, students may have trouble if they do not know what or how it is done. Students' attitudes toward OSCE can be more positive if they have fair, useful and relevant views toward it. However, if they feel it is too stressful or unorganized, then their learning experience can be adversely affected. Thus, student comments can be useful in the design and planning of OSCEs, in the development of stations, in the conduct of the OSCE, and in preparatory exercises (13).

OSCE has now become a common practice in medical colleges in Pakistan as an assessment tool for clinical competency. But it is the anxiety and stress that many students still report due to OSCE-based assessment. It is important to investigate the students' perception on OSCE stress and the effects of stress on student performance. This information can be used for medical educators to implement stress reduction strategies such as simulated OSCE, structured orientation, peer practice, counselling and timely feedback (14).

The present study was conducted to assess student perceptions of OSCE-related stress and performance among medical students at Northwest School of Medicine, Peshawar. The study aimed to determine the level of perceived stress, identify common stress factors, assess stress-related symptoms, evaluate student perceptions about the effect of stress on OSCE performance, and determine the association between OSCE stress level and performance.

METHODOLOGY

This descriptive cross-sectional study was conducted at Northwest School of Medicine, Peshawar, from January 2025 to June 2025. The study was carried out to assess student perceptions regarding stress related to Objective Structured Clinical Examination (OSCE) and its perceived effect on academic and clinical performance. A cross-sectional design was selected because it was suitable for collecting information from students at a single point in time regarding their experiences, stress level, and perceptions about OSCE-based assessment.

The study participants were undergraduate medical students who were sitting or had recently sat for OSCE, as part of their clinical evaluation. In total 82 pupils were studied. The

students were selected using non-probability consecutive sampling technique. All students who met inclusion criteria and attended for the data collection period and provided informed consent were included until the desired sample size was achieved.

Medical students in clinical years who had a clinical experience in OSCE were incorporated into the study. Incomplete questionnaires or students who were not present for the data collection, or who refused to participate were not included in the study. Students participated on a voluntary basis and were assured that their responses would not be shared with anyone but would be used for research purposes. The final analysis did not contain any identifying information.

The data was gathered with a structured questionnaire designed based on the literature reviewed on stress, anxiety and students performance related to OSCE. The questionnaire was divided into various parts including demographic data, past OSCE experience, level of perceived stress, sources of OSCE stress, symptoms of stress, perceived effect of stress on performance and student opinions on OSCE as an assessment tool. Demographic data included age, gender, year in study, and previous exposure to OSCE.

Students were asked to rate their level of stress before and during the OSCE and the responses were used to assess their perceived stress on the OSCE. Stress was divided into mild, moderate and severe based on the student's self-report. Fears of forgetting answers, examiner evaluation, lack of confidence, inadequate practice, difficulty in clinical skills, lack of familiarity with OSCE format, fear of not finishing the exam and time pressure during OSCE stations were among the common stress factors. Other physical and emotional symptoms included palpitations, sweating, trembling, headache, sleep disturbances, and abdominal discomfort.

Student performance was evaluated based on their own self-rated OSCE performance and available academic categories of performance (where applicable). Performance was classified as good, satisfactory and poor. Students also were queried if OSCE related stress had a negative effect on their performance, no major effect, or improved their alertness during OSCE. Furthermore, students' perceptions of OSCE were also evaluated by affirmative statements on fairness of OSCE, improvement in clinical skills, confidence in handling patients, comparison of OSCE stress to written examinations, need for more OSCE practice sessions, and usefulness of mock OSCE.

Before data collection, permission was obtained from the concerned department/institutional authority. The purpose of the study was explained to all participants. All students provided with an informed consent. Students were told that participation was not a requirement for a student's academic record and that refusal would not impact their academic record. The confidentiality and anonymity of the participants were respected throughout the study.

All data collected was entered and analyzed in SPSS version 26.0. Categorical variables (gender, year of study, and previous OSCE experience, stress level, causes of stress, stress symptoms, and perception responses) were expressed as frequencies and percentages. Continuous variables (age and OSCE score) were reported as mean and standard deviation. Chi-square test was used to compare the association between OSCE stress level and performance, and previous OSCE experience and stress level. The relationships between OSCE stress score and OSCE performance score was analysed using Pearson correlation. A value of $p \leq 0.05$ was deemed to be statistically significant.

RESULTS

Overall, there were 82 medical students in the study. The average age of the subjects was 22.14 ± 1.31 years. The age of most students was in the range 21-23 years. The number of female students was marginally higher than male students. Over half of the participants had experience in performing OSCEs and the rest of the students were performing an OSCE for which they had limited or no experience.

Table 1: Demographic Characteristics of Study Participants (n=82)

Variable	Frequency (n)	Percentage (%)
Age group		
20–21 years	24	29.3
22–23 years	46	56.1
24 years and above	12	14.6

Gender		
Male	36	43.9
Female	46	56.1
Year of study		
3rd year MBBS	28	34.1
4th year MBBS	30	36.6
Final year MBBS	24	29.3
Previous OSCE experience		
Yes	49	59.8
No	33	40.2

Student stress levels were determined prior to and during OSCE. The majority of students indicated moderate stress and almost a third of students indicated severe stress. A small percentage of students indicated that they experienced mild stress. This indicates that most of the students felt OSCE to be a stressful assessment tool.

Table 2: Level of Perceived OSCE-Related Stress among Students (n=82)

Stress Level	Frequency (n)	Percentage (%)
Mild stress	14	17.1
Moderate stress	44	53.7
Severe stress	24	29.2
Total	82	100.0

The stress of OSCE was also assessed and the common causes of OSCE related stress were also assessed. Fear of forgetfulness during the station and time pressure and fear of judgement by examiner were the two most frequently reported causes. The lack of confidence and insufficient practice were also frequently mentioned by students. The results show that psychological pressure and examination structure both were factors in the stress of OSCE.

Table 3: Common Factors Contributing to OSCE Stress among Students

Cause of Stress	Frequency (n)	Percentage (%)
Fear of forgetting answers	59	72.0
Time pressure during stations	55	67.1
Fear of examiner evaluation	51	62.2
Lack of confidence	47	57.3
Inadequate practice before OSCE	44	53.7
Difficulty in performing clinical skills	39	47.6
Lack of familiarity with OSCE format	31	37.8

Participants experienced many physical and emotional signs and symptoms associated with stress. The most common symptoms were palpitations, followed by sleep disturbance, sweating, and trembling. These symptoms are all indicative of OSCE stress being not only psychological but also having a physical effect in many students.

Table 4: Stress-Related Symptoms Reported by Students

Symptom	Frequency (n)	Percentage (%)
Palpitations	48	58.5
Sleep disturbance before OSCE	43	52.4
Sweating	39	47.6
Trembling	34	41.5
Headache	26	31.7
Nausea or abdominal discomfort	18	22.0

Students were asked if they thought stress had an impact on OSCE performance. Over half felt stress was having a negative impact on their learning. But some students said that they felt they were alert and focused during the exam if it was not too stressful.

Table 5: Perceived Effect of Stress on OSCE Performance

Perceived Effect	Frequency (n)	Percentage (%)
Stress negatively affected performance	47	57.3
Stress had no major effect	21	25.6
Stress improved alertness/performance	14	17.1
Total	82	100.0

The OSCE performance of students was classified as good, satisfactory and poor performance. The overall performance of most students was satisfactory and 26.8% were performing well. 19.5% of students were found to be performing poorly. The mean OSCE score was 68.42 ± 9.86.

Table 6: OSCE Performance of Study Participants

Performance Category	Frequency (n)	Percentage (%)
Good performance	22	26.8
Satisfactory performance	44	53.7
Poor performance	16	19.5
Total	82	100.0

The correlation between stress level and OSCE performance was determined. The poor performance rate was higher in the students experiencing severe stress level, and the good performance rate was higher in the students experiencing mild or moderate level of stress. The p value for the correlation between OSCE stress and performance was 0.018 and this correlation was statistically significant.

Table 7: Association between OSCE Stress Level and Performance

Stress Level	Good Performance n (%)	Satisfactory Performance n (%)	Poor Performance n (%)	p-value
Mild stress (n=14)	6 (42.9)	7 (50.0)	1 (7.1)	
Moderate stress (n=44)	14 (31.8)	24 (54.5)	6 (13.7)	**0.018**
Severe stress (n=24)	2 (8.3)	13 (54.2)	9 (37.5)	

The students' perceptions of OSCE as an assessment technique were also explored. Most students found OSCE as a useful tool that helps them enhance their clinical skills and a fair method of evaluating their practical skills. Most students, however, also indicated OSCE to be more stressful than written exams. Most students recommended conducting mock OSCE sessions prior to the final OSCE.

Table 8: Student Perceptions about OSCE

Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
OSCE is a fair assessment method	52 (63.4)	18 (22.0)	12 (14.6)
OSCE improves clinical skills	61 (74.4)	13 (15.9)	8 (9.7)
OSCE improves confidence in patient handling	49 (59.8)	20 (24.4)	13 (15.8)
OSCE is more stressful than written exams	67 (81.7)	9 (11.0)	6 (7.3)
More practice sessions are needed before OSCE	69 (84.1)	8 (9.8)	5 (6.1)

Mock OSCE should be conducted before final OSCE	72 (87.8)	6 (7.3)	4 (4.9)

Stress level was compared to previous OSCE experience. The students who did not have any previous OSCE experience were more likely to suffer from severe stress during OSCE than the students who had already experienced OSCE. This difference was statistically significant indicating that the familiarity with OSCE may help to decrease stress during examination.

Table 9: Association between Previous OSCE Experience and Stress Level

Previous OSCE Experience	Mild Stress n (%)	Moderate Stress n (%)	Severe Stress n (%)	p-value
Yes (n=49)	11 (22.4)	29 (59.2)	9 (18.4)	
No (n=33)	3 (9.1)	15 (45.5)	15 (45.4)	**0.011**

Correlation analysis was used to determine the relationship between OSCE stress score and OSCE performance score. There was a weak negative correlation between stress score and OSCE score, suggesting that students who had higher stress scores had lower OSCE scores. This correlation was found to be statistically significant.

Table 10: Correlation between OSCE Stress Score and OSCE Performance Score

Variables Compared	Correlation Coefficient (r)	p-value
OSCE stress score and OSCE performance score	-0.34	**0.002**

In general, the findings indicate that OSCE was very stressful to the majority of students. Main stressors were examiner evaluation, time limitation and fear of forgetting answers. The students found OSCE as a tool to assess the clinical skills useful and fair, however high stress levels significantly related with poor performance.

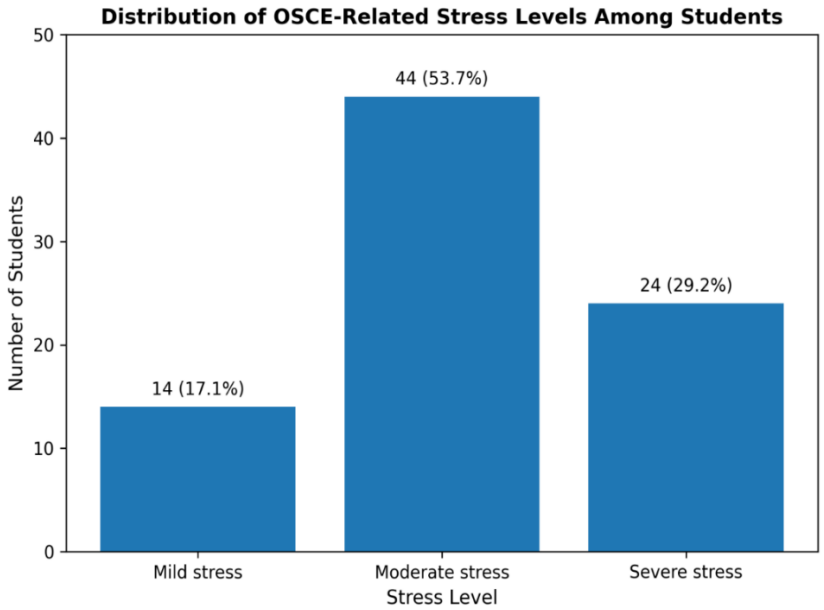

Figure 1: Distribution of OSCE-related stress levels among students.

The graph shows that most students had moderate stress 44 (53.7%), followed by severe stress 24 (29.2%), while mild stress was reported by 14 (17.1%) students.

DISCUSSION

The present study assessed student perceptions regarding OSCE-related stress and its effect on performance among medical students at Northwest School of Medicine, Peshawar. The findings showed that OSCE was perceived as a stressful assessment method by

most students. In this study, more than half of the participants reported moderate stress, while nearly one-third experienced severe stress. This indicates that although OSCE is widely used for assessing clinical competence, it may create considerable psychological pressure among students. The structured nature of OSCE, limited time for each station, direct observation by examiners, and expectation of immediate clinical performance may explain the higher level of stress reported by students (15, 16).

The most frequently cited causes of stress to OSCE were fear of forgetting the answer, time constraint, fear of examiner evaluation, lack of confidence and no good practice. The results indicate that OSCE stress is related to examination-related and student-related factors. Time limited stations can put pressure on students as they are expected to show knowledge, communication, examination skills, and decision making in a short amount of time. Likewise, the presence of the examiner may cause the students to be aware of themselves and make them feel uneasy and less confident. Insufficient practice and unfamiliarity with OSCE format may also add to the stress, particularly if students have limited experiences with OSCE (17).

The students also commonly reported physical and emotional symptoms related to stress. The participants experienced an array of symptoms, including palpitations, sleep disturbance, sweating, trembling, headache, and abdominal discomfort. The signs in these students demonstrate that OSCE stress is not just an emotional distress, but can also lead to physical changes. It is especially important for sleep disturbance prior to OSCE as this can impact memory, concentration and clinical thinking. Consequently, those students who are experiencing more stress levels could be less mentally prepared coming into the test and this could affect their performance (18).

In the present study, there was also a significant association noticed between stress level and OSCE performance. Students experiencing severe stress more often showed poor performance, those with mild or moderate stress more often showed good performance. A weak negative correlation was also noted between OSCE stress score and OSCE performance score indicating that increased stress was associated with decreased OSCE scores. This is consistent with the theory that too much stress disrupts concentration, recall, confidence and psychomotor performance. But a few students reported that stress enhanced their alertness, indicating that moderate stress sometimes motivates students, and that high stress hinders student performance.

Stress was significantly related to previous OSCE experience (19).

Severe stress was less likely to be reported if students had previously used OSCE. This discovery is a reminder of the need to be familiar with the OSCE process. Having knowledge of how OSCE stations are structured and being aware of how marking will be conducted, as well as what the examiner expects and how the time will be spent can help reduce anxiety and build confidence. Thus, repeated exposure and orientation sessions and mock OSCE sessions can be useful to reduce unnecessary examination stress and the preparedness of the students (20).

Among the students, most felt OSCE was a fair and useful assessment tool in spite of the stress it caused. Many students felt that OSCE enhances clinical skills, confidence in handling patients and hands on learning. This demonstrates that OSCE was perceived as having a pedagogical value despite being a stressing experience for the students. Most of the students also recommended to have more practice sessions and OSCE before the final assessment. The idea here is that stress can be lowered not by eliminating OSCE but by doing more to prepare students, orient them, give them feedback, and provide them with support prior to the exam (21).

The results of this study have implications for medical education. Structured OSCE orientation sessions, demonstration videos, practice stations and formative mock OSCEs should be offered before summative OSCE assessment. Summary of feedback from mock OSCE will help to highlight areas of weakness and boost confidence. In addition, faculty should ensure that OSCE stations are well organized, instructions simple, time limits set properly, and markers use consistent and clear marking criteria. Counselling of students, management of stress and peer-assisted learning may also be beneficial in decreasing anxiety associated with OSCE.

There were some limitations to this study. It was carried out at a single medical college with 82 students only, thus may not be applicable in other medical colleges. Stress and perceptions of performance were largely self-reported, with the possibility for response bias. In addition, the study was of a cross sectional design, therefore, the causal relationship between stress and

performance could not be confirmed. More validation of stress assessment scales is recommended and future multicenter studies with larger numbers of participants are recommended. Additional studies could also explore the relationship between perceived stress and the actual OSCE results to gain a deeper insight into how stress plays a role in the performance of an OSCE.

CONCLUSION

The study concluded that OSCE was perceived as a stressful assessment method by most medical students. Moderate stress was the most common level of stress, followed by severe stress. The major causes of OSCE-related stress were fear of forgetting answers, time pressure, fear of examiner evaluation, lack of confidence, and inadequate practice. Stress-related symptoms such as palpitations, sleep disturbance, sweating, and trembling were also commonly reported.

Higher OSCE stress was significantly associated with poorer performance, while previous OSCE experience was associated with reduced stress. Although students considered OSCE stressful, most of them also accepted it as a fair and effective method for assessing clinical skills. The findings suggest that mock OSCE sessions, repeated practice, clear orientation, constructive feedback, and stress management support should be included in medical education programs to reduce anxiety and improve student performance.

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