**Alqalam Journal of Medical and Applied Sciences.** 2026;9(11):3563-3571
https://doi.org/10.54361/ajmas.261105

*Original article*

# Perceptions of Surgery Objective Structured Clinical Examination (OSCE) Among Medical Students at the Faculty of Medicine, University of Tripoli: A Cross-Sectional Study

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**Abstract**
The Objective Structured Clinical Examination (OSCE) is a widely used assessment method for evaluating clinical competence in undergraduate medical education. Its effectiveness depends not only on the assessment of clinical skills but also on appropriate curriculum coverage, adequate station timing, examiner professionalism, fairness, objectivity, and effective examination organization. This study was conducted to evaluate the perceptions of fifth-year medical students at the University of Tripoli regarding the quality and organization of a surgical OSCE, with particular emphasis on overall impression, perceived difficulty, curriculum coverage, adequacy of station time, examiner professionalism, fairness and objectivity, and overall satisfaction. A descriptive cross-sectional study was conducted among fifth-year medical students at the Faculty of Medicine, University of Tripoli. The surgical OSCE evaluated in this study was developed using curriculum blueprinting as a core component of the examination design process, with OSCE stations systematically mapped to intended learning outcomes, core competencies, and relevant components of the surgical curriculum before finalization of the examination content. Data were collected using a seven-item structured questionnaire addressing students' perceptions of the surgical OSCE. A total of 174 responses collected between 28 July and 6 August 2026 were analyzed. Descriptive statistics were used to calculate frequencies and percentages for each response category. The dataset contained no demographic variables beyond the study population specified above. The original questionnaire consisted of seven perception domains. Of the 174 responses, 132 (75.9%) students rated their overall impression of the OSCE as Good or Excellent. Regarding examination difficulty, 100 (57.5%) considered it Fair, while 65 (37.4%) considered it Difficult or Very Difficult. Regarding curriculum coverage, 142 students (81.6%) reported that the OSCE covered the surgery curriculum mostly or completely. Concerning station time, 133 students (76.4%) considered the allocated time Sufficient or Completely Sufficient, while 41 (23.6%) reported some degree of insufficient time. Examiner professionalism was rated Good or Excellent by 124 students (71.3%). Furthermore, 130 students (74.7%) agreed or strongly agreed that examiners were fair and objective. Overall, 133 students (76.4%) reported being Satisfied or Very Satisfied with the organization and conduct of the OSCE. The surgical OSCE at the University of Tripoli was generally perceived positively by fifth-year medical students. The highest favorable perception concerned curriculum coverage, while overall satisfaction, perceived examiner professionalism, fairness, and time adequacy were also favorable. Nevertheless, the proportion of students reporting high examination difficulty and insufficient station time highlights opportunities for targeted quality improvement. Regular post-OSCE evaluation, examiner calibration, station review, and optimization of station timing are recommended.
**Keywords**: Objective Structured Clinical Examination; OSCE; Surgical Education; Medical Students.

## Introduction

Assessment of clinical competence is a fundamental component of undergraduate medical education. Medical students are expected to demonstrate not only theoretical knowledge but also practical clinical skills, clinical reasoning, communication, professionalism, and the ability to apply knowledge appropriately in clinical situations. Consequently, clinical assessment methods must provide adequate opportunities to evaluate these different dimensions of competence. Traditional clinical examinations have several recognized limitations, including variability in patient presentations, examiner judgment, case selection, and the range of competencies that can be assessed during a limited examination period. In response to these challenges, Harden and colleagues introduced the Objective Structured Clinical Examination (OSCE) in 1975 as a structured approach to assessing clinical competence through a series of stations with defined tasks and standardized assessment procedures. [1]

The OSCE subsequently became an important component of medical education assessment. Its structure allows students to rotate through different stations, with each station targeting specific clinical tasks or competencies. Standardized instructions, structured marking schemes, and multiple stations can improve the consistency and comprehensiveness of clinical assessment. [2–5-6]

The educational value of an OSCE, however, depends on the quality of its design and implementation. An effective OSCE requires appropriate station construction, alignment with learning outcomes, adequate sampling of the curriculum, examiner preparation, standardized scoring, appropriate time allocation, and continuous quality assurance. [4–7]

Curriculum blueprinting is particularly important because an assessment should adequately represent the knowledge and skills that students are expected to acquire. Poor alignment between the curriculum and assessment may result in underrepresentation of important competencies or excessive emphasis on selected topics. [5,6]

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***Received:*** *26-08-2026 - **Accepted:** 25-10-2026 - **Published:** 02-11-2026*

The organization of the OSCE is also critical. Examiner training and standardization are essential because variations in examiner behavior and scoring can influence the reliability and perceived fairness of the assessment. The AMEE guidance on OSCE organization emphasizes examiner training, standardized patients, appropriate scoring rubrics, and continuous quality assurance throughout the examination cycle. [6,7-20]

Time allocation represents another important operational component. Although OSCE stations must provide sufficient time for students to demonstrate the required competencies, excessively long examinations may create logistical difficulties, while insufficient time may prevent students from completing the intended tasks. Previous studies have identified station timing as an important factor influencing student perceptions of OSCE quality. [8–10]

Student perception is therefore an important component of OSCE quality assurance. Although satisfaction alone cannot establish validity or reliability, student feedback can identify practical problems related to station instructions, timing, examiner behavior, fairness, and organization. Studies among medical students have generally reported favorable perceptions of OSCEs while also identifying concerns related to anxiety, examiner variability, and time constraints. [8–11]

Surgical education presents particular challenges because students are expected to integrate knowledge, physical examination skills, clinical reasoning, procedural skills, and professional behavior. Previous studies have demonstrated that OSCEs can be feasible and acceptable for evaluating undergraduate surgical competencies. [9,12,13-19-31]

Despite the widespread use of OSCEs internationally, local evaluation is important because the quality and acceptability of an examination may vary according to institutional context, curriculum, available resources, examiner preparation, and student characteristics [14-15-18].

Therefore, the present study was conducted to evaluate the perceptions of fifth-year medical students at the Faculty of Medicine, University of Tripoli, regarding a surgical OSCE. The study specifically examined seven domains: overall impression, perceived difficulty, curriculum coverage, adequacy of station time, examiner professionalism, fairness and objectivity, and overall satisfaction.

## Methods

### Study Design and setting

A descriptive cross-sectional study was conducted at the Faculty of Medicine, University of Tripoli, Libya, to evaluate student perceptions of a surgical OSCE.

### Study Population

The study population consisted of fifth-year medical students at the Faculty of Medicine, University of Tripoli, who participated in the surgical OSCE and subsequently provided feedback through the structured questionnaire.

### OSCE Curriculum Blueprinting

Curriculum blueprinting was used as a core component of the surgical OSCE design process. Before finalization of the examination content and stations, the OSCE stations were systematically mapped to the intended learning outcomes, core competencies, and relevant components of the surgical curriculum to ensure appropriate content representation and alignment between teaching and assessment. This blueprinting process was incorporated into the examination development process before the OSCE was administered to the participating students.

### Sample Size

A total of 174 completed questionnaire responses were available for analysis. The responses were collected between 28 July and 6 August 2026. The original dataset contains the timestamp and responses for all participants across four pages.

### *Data Collection Instrument*

The questionnaire consisted of seven structured questions assessing the following domains:

1. Overall impression of the OSCE examination.
2. Perceived difficulty level.
3. Extent of coverage of topics included in the surgery curriculum.
4. Adequacy of time allocated for each OSCE station.
5. Attitude and professionalism of examiners.
6. Perceived fairness and objectivity of examiners.
7. Overall satisfaction with the organization and conduct of the OSCE.

These domains correspond directly to the questionnaire contained in the supplied dataset.

### *Statistical Analysis*

Data were analyzed using descriptive statistical methods. Categorical variables were summarized as frequencies and percentages. For analytical interpretation, response categories were consolidated into conceptually and educationally meaningful groups, as follows:

- **Overall impression:** Good/Excellent
- **Perceived examination difficulty:** Difficult/Very Difficult
- **Curriculum coverage:** Mostly/Completely

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- **Adequacy of station time:** Sufficient/Completely Sufficient
- **Examiner professionalism:** Good/Excellent
- **Perceived fairness:** Agree/Strongly Agree
- **Overall satisfaction:** Satisfied/Very Satisfied

The analysis included all 174 available responses. As the dataset comprised students' perceptions of the OSCE rather than objective examination performance data, the analysis was limited to descriptive measures of students' responses. Accordingly, psychometric and examination-performance parameters, including OSCE reliability, validity, item difficulty, item discrimination, and inter-rater reliability, were not assessed.

***Ethical Considerations***

The supplied dataset did not contain identifiable student information. However, information regarding formal institutional ethical approval or exemption was not included in the provided dataset. Before submission to a peer-reviewed journal, the investigators should confirm whether institutional ethical approval or an exemption/waiver was required and add the relevant approval statement.

## Results

### Overall Student Perception of the Surgical OSCE

A total of 174 completed responses were included in the analysis. Questionnaire responses were collected between 28 July and 6 August 2026**,** with all respondents providing responses across the seven domains evaluated in the surgical Objective Structured Clinical Examination (OSCE).

Overall perceptions of the surgical OSCE were predominantly positive. Among the 174 respondents, 85 (48.9%) rated their overall impression of the examination as *Good*, while 47 (27.0%) rated it as *Excellent*. A further 25 students (14.4%) rated the examination as *Fair*, and 17 (9.8%) rated it as *Poor*. Thus, 132 students (75.9%) reported a *Good* or *Excellent* overall impression of the surgical OSCE, indicating that approximately three-quarters of respondents perceived the examination positively (Figure 1).

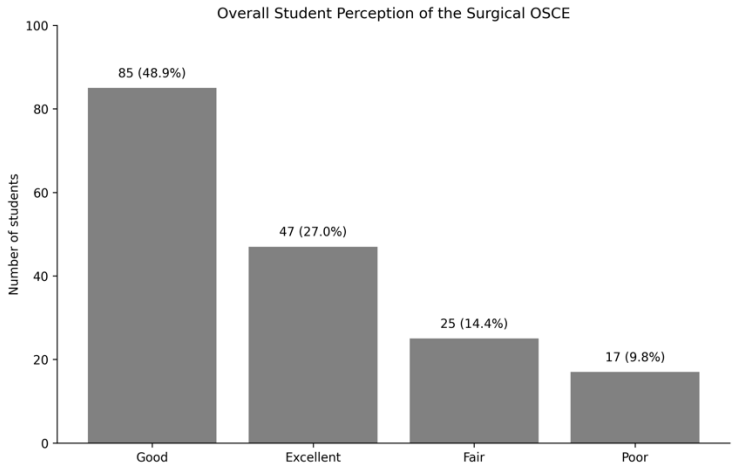



***Figure 1. Distribution of students' overall perceptions of the surgical Objective Structured Clinical Examination (OSCE). Bars represent the number of respondents in each response category, with corresponding percentages shown above each bar (n = 174). Overall, 75.9% of students rated the OSCE as Good or Excellent.***

### Perceived Difficulty of the Surgical OSCE

Students' perceptions of the difficulty of the surgical OSCE varied across the response categories. The most frequently reported response was *Fair*, selected by 100 students (57.5%). A total of 55 students (31.6%) rated the examination as *Difficult*, while 10 (5.7%) considered it *Very Difficult*. Only 9 students (5.2%) rated the examination as *Easy*.

Overall, 65 students (37.4%) perceived the OSCE as *Difficult* or *Very Difficult*, whereas 109 (62.6%) reported the examination as *Fair* or *Easy*. Thus, although the majority of students did not perceive the examination as highly difficult, more than one-third reported a relatively high level of perceived difficulty (Figure 2).

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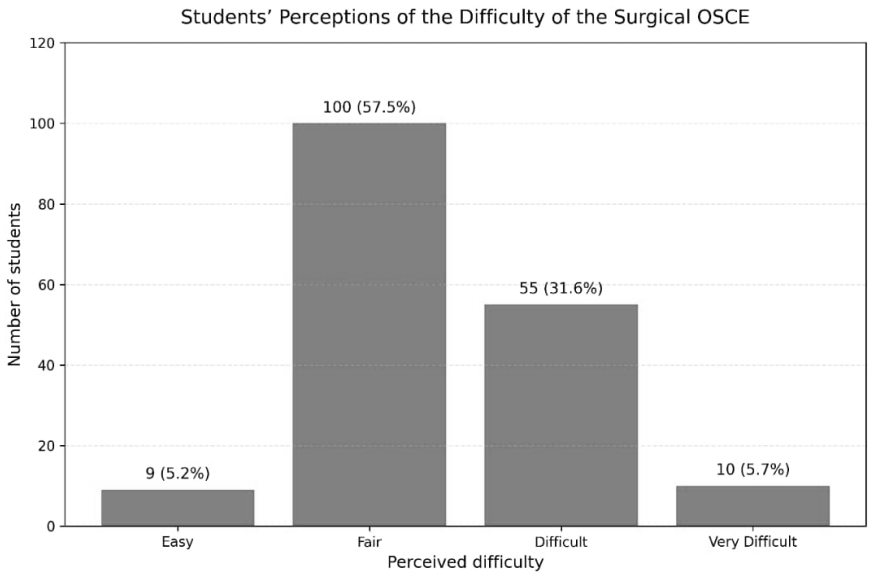



***Figure 2. Distribution of students' perceptions regarding the difficulty of the surgical Objective Structured Clinical Examination (OSCE). Bars represent the number of respondents in each response category, with corresponding percentages shown above each bar (n = 174). The most frequently reported category was Fair (57.5%), while 37.4% of students rated the examination as Difficult or Very Difficult.***

**Curriculum Coverage**

Regarding perceived coverage of the surgery curriculum, the majority of students reported favorable perceptions. Specifically, 95 students (54.6%) reported that the OSCE covered the curriculum mostly, while 47 students (27.0%) considered the coverage complete. In contrast, 25 students (14.4%) reported that the curriculum was covered partially**,** and only 7 students (4.0%) reported that it was not covered at all. Overall, 142 students (81.6%) perceived the OSCE as covering the surgery curriculum mostly or completely, representing the highest favorable response across the seven evaluated domains**.** These findings suggest that students generally perceived the OSCE as well aligned with and representative of the surgery curriculum.

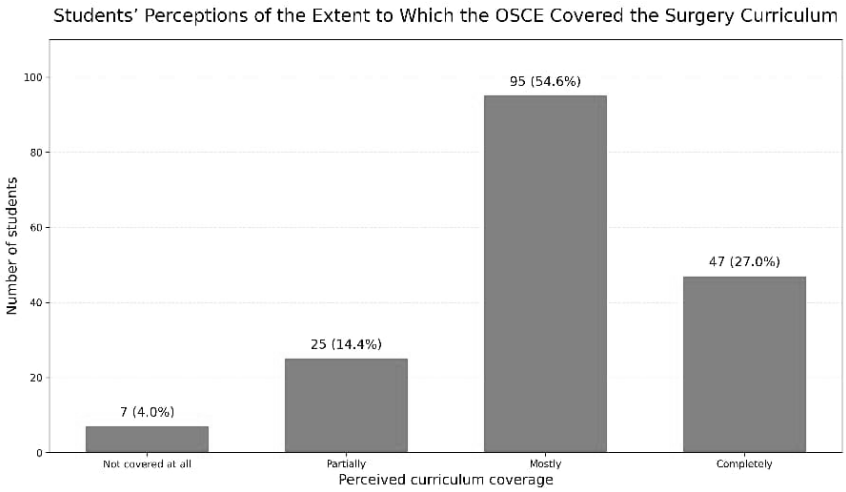



***Figure 3. Students' perceptions of the extent to which the OSCE covered the surgery curriculum.***

**Adequacy of Station Time**

Regarding the adequacy of the time allocated to each OSCE station, 82 students (47.1%) considered the available time sufficient, while 51 students (29.3%) considered it completely sufficient. In contrast, 34 students (19.5%) reported that the allocated time was insufficient, and 7 students (4.0%) considered it completely insufficient. Overall, 133 students (76.4%) perceived the allocated station time as sufficient or completely sufficient, whereas 41 students (23.6%) considered it insufficient or completely insufficient. These findings indicate that the majority of students were satisfied with the time available to complete the OSCE stations.

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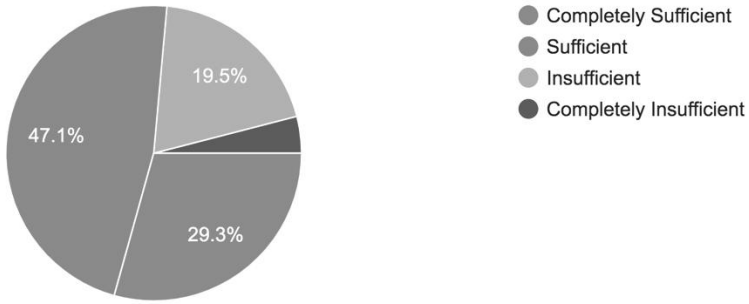



***Figure 4. Students' perceptions of the adequacy of time allocated to each OSCE station.***

**Examiner Attitude and Professionalism**

Regarding examiner attitude and professionalism, 67 students (38.5%) rated the examiners as Good, while 57 students (32.8%) rated them as Excellent. In comparison, 30 students (17.2%) considered the examiners' attitude and professionalism Fair, and 20 students (11.5%) rated them as Poor. Overall, 124 students (71.3%) rated examiner attitude and professionalism as Good or Excellent, indicating that the majority of students had a positive perception of examiner conduct during the OSCE.

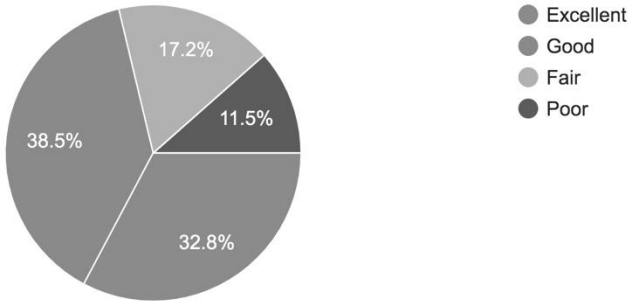



***Figure 5. Students' perceptions of examiner attitude and professionalism during the OSCE.***

**Fairness and Objectivity**

Regarding examiner fairness and objectivity, **89 students (51.1%)** agreed that the examiners were fair and objective, while **41 students (23.6%)** strongly agreed. In contrast, **27 students (15.5%)** disagreed and **17 students (9.8%)** strongly disagreed with this statement. Overall, **130 students (74.7%)** agreed or strongly agreed that the examiners demonstrated fairness and objectivity during the OSCE, indicating a generally positive perception of examiner impartiality.

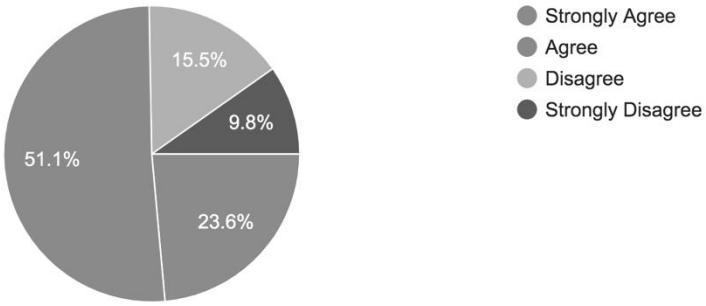



***Figure 6. Students' perceptions of examiner fairness and objectivity during the OSCE.***

**Overall Satisfaction**

Regarding overall satisfaction with the organization and conduct of the OSCE, **92 students (52.9%)** reported being **Satisfied**, while **41 students (23.6%)** were **Very Satisfied**. In contrast, **28 students (16.1%)** reported being **Dissatisfied**, and **13 students (7.5%)** were **Very Dissatisfied**. Overall, **133 students (76.4%)** were Satisfied or Very Satisfied with the OSCE, indicating a generally high level of student satisfaction with the organization and conduct of the examination.

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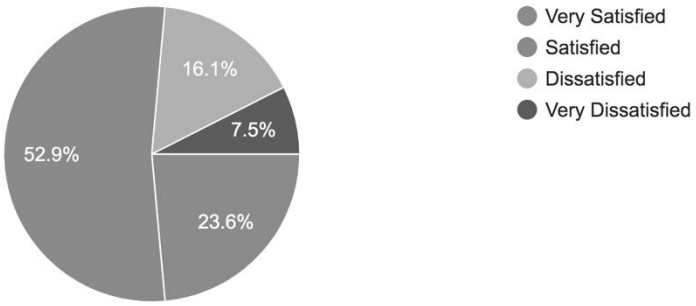



**Figure 7.** *Students' overall satisfaction with the organization and conduct of the OSCE.*

## Discussion

The present study evaluated fifth-year medical students' perceptions of the quality, organization, and conduct of a surgical Objective Structured Clinical Examination (OSCE) at the Faculty of Medicine, University of Tripoli. Overall, the findings indicate a predominantly favorable perception of the examination, with approximately three-quarters of students reporting positive overall impressions and satisfaction. Students also reported favorable perceptions regarding curriculum coverage, station time, examiner professionalism, and examiner fairness and objectivity.

The findings are broadly consistent with the established role of the OSCE as a structured approach to the assessment of clinical competence. Since its introduction, the OSCE has been increasingly adopted in medical education because of its structured format and potential to provide more standardized and comprehensive assessment of clinical skills than conventional clinical examinations.[1-4-16-17] Nevertheless, the quality of an OSCE depends not only on its format but also on appropriate curriculum alignment, station design, examiner standardization, timing, and quality assurance.[5-7-23] In the present study, 75.9% of students rated their overall impression of the OSCE as good or excellent, indicating generally favorable acceptance of the examination.

This finding is consistent with previous studies reporting generally positive student perceptions of OSCEs, while also identifying areas requiring continued refinement in examination organization and administration. Majumder et al. reported favorable perceptions among both students and examiners, although several aspects of OSCE implementation required further improvement.[10] Similarly, Nasir et al. reported generally positive student perceptions of the validity, objectivity, comprehensiveness, and organization of a surgical OSCE.[11-22-24]

The favorable overall perception observed in the present study suggests that the surgical OSCE was broadly acceptable to fifth-year medical students at the University of Tripoli. However, perceived acceptability should not be considered synonymous with psychometric quality. Student feedback provides important evidence regarding the educational and administrative experience of the examination but should ideally be interpreted alongside objective measures of assessment performance and quality.[26-27-28]

Perceived curriculum coverage was the most favorable domain assessed in this study, with 81.6% of students reporting that the OSCE covered the surgery curriculum mostly or completely. This finding is particularly relevant from an assessment-quality perspective because an effective OSCE should be aligned with the intended learning outcomes and should adequately sample the content and competencies addressed within the curriculum. Established OSCE guidance emphasizes the importance of blueprinting and alignment between assessment stations and educational objectives as components of assessment validity.[ 6-7-29]

The high level of perceived curriculum coverage suggests that students recognized a strong relationship between the content assessed during the OSCE and the surgical material taught within their curriculum. This may support the continued use of OSCE-based assessment within undergraduate surgical education.

Nevertheless, student perception alone cannot establish content validity. In the present OSCE, curriculum blueprinting was incorporated into the examination development process, with stations mapped against predefined intended learning outcomes, core competencies, and relevant areas of the surgical curriculum. This process provided a structured approach to ensuring content representation and alignment between the assessment and the surgical curriculum. However, the present study evaluated students' perceptions rather than independently testing the content validity of the examination.

In the present study, 37.4% of students perceived the examination as difficult or very difficult**.**

Perceived difficulty should not necessarily be regarded as a weakness of the assessment. An appropriately designed clinical examination should provide sufficient challenge to distinguish different levels of clinical competence. However, excessive or unexpected difficulty may arise from unclear station instructions, inappropriate task complexity, inadequate preparation, or content that exceeds the expected level of the learners.

Previous studies have identified examination stress and perceived difficulty as common concerns among students undertaking OSCEs.[8-9-10-30] Therefore, the appropriate response is not necessarily to reduce examination difficulty, but rather to determine whether the perceived difficulty reflects an appropriate level of clinical challenge or deficiencies in individual station design. Future OSCE committees should therefore review stations perceived as particularly difficult and examine their instructions, clinical tasks, expected competencies, scoring criteria, and alignment with the level of fifth-year students.

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In this study, 76.4% of students considered the time allocated to OSCE stations sufficient or completely sufficient**,** whereas 23.6% perceived the allocated time as insufficient or completely insufficient.

Adequate timing is an important component of OSCE design because candidates require sufficient time to understand the task, perform the required clinical activity, and communicate their findings appropriately. Excessively limited time may introduce construct-irrelevant effects by measuring speed or familiarity with the examination format in addition to the intended clinical competency.

Nasir et al. reported that 70.2% of students considered the time allocated to OSCE stations adequate.[11] The corresponding proportion in the present study was somewhat higher at 76.4%. Nevertheless, the finding that almost one-quarter of students perceived insufficient time warrants attention.[32]

A station-level review would therefore be appropriate, particularly for stations associated with greater perceived time pressure. The examination committee should assess whether the number of required tasks, complexity of instructions, scoring requirements, or expected communication can reasonably be completed within the allocated period.

In the present study, 71.3% of students rated examiner professionalism as good or excellent**.** Examiner behavior represents an important component of the student experience and may influence perceptions of fairness, objectivity, and professionalism. Standardization of examiner behavior and adequate examiner preparation are therefore important considerations in OSCE administration.[6,7-32]. Although the majority of students reported favorable perceptions, 28.7% rated examiner professionalism as fair or poor. This finding suggests an opportunity for further examiner development and standardization.

Potential strategies include:

- standardized pre-examination examiner orientation;
- clear station-specific instructions;
- examiner calibration sessions;
- standardized marking criteria;
- practice scoring using sample candidate performances; and
- clarification of examiner roles and expected professional behavior.

These measures may help minimize unnecessary variability in examiner behavior and improve consistency across stations.

A total of 74.7% of students agreed or strongly agreed that examiners were fair and objective.

Perceived fairness is particularly important in high-stakes undergraduate assessments because students' confidence in the assessment process may influence their acceptance of examination outcomes. One of the principal advantages of the OSCE is its structured format, which was developed in part to reduce the subjectivity and variability associated with traditional clinical examinations.[1-4-29]

However, favorable student perceptions of fairness do not independently demonstrate objective examiner consistency. Examiner-related variability can persist despite the structured nature of an OSCE. Standardized marking criteria, examiner training, calibration, and quality-assurance procedures can help minimize unwanted variation.[6-7-24]

The relatively favorable perception of examiner fairness in the present study therefore supports the acceptability of the examination process, while the proportion of students expressing less favorable views indicates that continued attention to examiner standardization remains warranted.

Overall satisfaction with the surgical OSCE was favorable, with 76.4% of students reporting that they were satisfied or very satisfied.

This finding is broadly consistent with previous literature indicating that students generally consider OSCEs acceptable assessment methods.[9-11] The overall satisfaction observed in this study, together with the favorable findings across several other domains, suggests that the examination was generally well accepted by the participating students. Nevertheless, satisfaction should not be interpreted as direct evidence of examination validity or reliability. Student satisfaction represents one dimension of educational quality and should be considered alongside curriculum alignment, assessment blueprinting, psychometric characteristics, examiner performance, standard setting, and station-level evaluation.[5-7,14]

**Educational Implications**

The findings have several implications for undergraduate surgical education at the Faculty of Medicine, University of Tripoli. First, the high level of perceived curriculum coverage is consistent with the use of curriculum blueprinting as a core component of the OSCE design process. Continuing to apply blueprinting before each examination can help maintain alignment between teaching, learning outcomes, and assessment. Second, although most students considered station timing adequate, the finding that nearly one-quarter perceived insufficient time suggests that station-level timing should be reviewed systematically, particularly for stations associated with greater time pressure. Third, examiner development should remain an important component of OSCE quality assurance. Although examiner professionalism and fairness were viewed favorably overall, further examiner training and calibration may improve consistency and student confidence. Finally, structured student feedback should be incorporated routinely into the post-examination quality-improvement process. Repeated collection and comparison of student feedback may allow the faculty to identify persistent problems and evaluate whether implemented interventions produce improvements over time.

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**Strengths of the Study**

This study has several strengths.

1. It included a relatively large number of respondents (n = 174).
2. It focused on a clearly defined population of fifth-year medical students.
3. It examined perceptions within the specific context of undergraduate surgical education.
4. It assessed multiple dimensions of OSCE quality, including overall perception, difficulty, curriculum coverage, station timing, examiner professionalism, fairness, and satisfaction.
5. Data were obtained directly from students who had participated in the examination.
6. The findings provide evidence of both strengths and specific areas requiring improvement, thereby offering practical implications for future OSCE administration.

**Limitations**

Several limitations should be considered when interpreting the findings.

First, the cross-sectional design limits the ability to establish temporal or causal relationships.

Second, the study assessed student perceptions rather than objective measures of clinical competence. Consequently, favorable perceptions cannot be interpreted as evidence that the examination accurately measured students' clinical performance.

Third, examination scores and station-level psychometric data were not available in the dataset. Therefore, measures of internal consistency, examination reliability, item difficulty, item discrimination, and examiner inter-rater reliability could not be evaluated.

Fourth, potentially relevant demographic and academic variables, including sex, age, academic performance, and previous OSCE experience, were not available for analysis. Consequently, it was not possible to determine whether perceptions differed according to students' demographic or educational characteristics.

Fifth, the questionnaire did not include qualitative open-ended questions. Such responses could have provided more detailed explanations of students' concerns and generated additional insights into specific aspects of station design and examination administration.

Finally, information regarding formal institutional ethical approval or exemption was not available in the supplied study materials. This information should be verified and appropriately reported before submission for publication.

**Conclusion**

This study demonstrates that the surgical OSCE at the Faculty of Medicine, University of Tripoli was generally well received by fifth-year medical students. Approximately three-quarters or more of students reported favorable perceptions regarding overall impression, curriculum coverage, adequacy of station time, examiner fairness, and overall satisfaction.

The most favorable finding concerned perceived curriculum coverage, with 81.6% of students reporting that the OSCE covered the surgery curriculum mostly or completely. This finding suggests good perceived alignment between the examination and the surgical curriculum. Nevertheless, approximately one-third of students perceived the examination as difficult or very difficult, while nearly one-quarter reported that station time was insufficient. These findings highlight opportunities for targeted station review and optimization.

Overall, the findings support the continued use of the OSCE as an important component of undergraduate surgical assessment at the University of Tripoli. However, student perceptions should be considered one component of a broader assessment-quality framework. Future evaluations should integrate student feedback with station-level performance data, psychometric analysis, examiner standardization, and longitudinal monitoring to provide a more comprehensive evaluation of OSCE quality and effectiveness.

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***Received****: 26-08-2026 -* ***Accepted****: 25-10-2026 -* ***Published****: 02-11-2026*