ORIGINAL ARTICLE

Comparison of standardized, structured clinical case examination and traditional long-case examination for assessment of final-year medical students: a non-randomized control trial

Fozia Umber Qureshi[1], Shaherzad Sohail[2*], Lubna Riaz Dar[1]

Biomedica - Official Journal of University of Health Sciences, Lahore, Pakistan
Volume 38(2):77-82
https://doi.org/10.51441/BioMedica/5-631

ABSTRACT

Background and Objective: To improve the reliability and validity of assessment methods, it is always required to revisit older modalities and introduce new ways to promote students' engagement and learning. The objective of this study was to compare standardized, structured clinical case and traditional long-case examination systems for the evaluation of clinical competency of final-year medical students.

Methods: A non-randomized control study was conducted at the Department of Obstetrics (Obs) and Gynecology (Gyne), Shalamar Medical and Dental College, Lahore, Pakistan, from January 2021 to 2022. All the final-year MBBS students were assessed by standardized, structured clinical case examination at the end of the clinical rotation of Gyne/Obs. Their scores were compared with the scores of previous year students who were examined by traditional long case at the end of the clinical rotation in the same discipline. The perceptions of students and examiners were also obtained by using the predesigned questionnaire using the Likert scale.

Results: The mean scores obtained by the students assessed by traditional long case structured long case were 64.3 and 69.2, respectively ($p = 0.001$). An overall positive perception for structured long-case examination by students and examiners were seen in comparison to the traditional long-case method of assessment.

Conclusion: The standardized, structured clinical case evaluation system is better than the traditional long-case examination as it helps in identifying areas of weakness and covers a wide range of clinical skills to be assessed. However, time management for each station remains a challenge for both examiners and students.

Keywords: Standardized, structured clinical case, traditional long case, assessment, medical students, competence.

Received: 10 February 2022 **Revised date:** 15 May 2022 **Accepted:** 04 June 2022

Correspondence to: Shaherzad Sohail
*Associate Professor of Obstetrics and Gynecology, Shalamar Medical and Dental College, Lahore, Pakistan.
Email: drshaherzad@gmail.com
Full list of author information is available at the end of the article.

Introduction

Students' assessment is a complex process but it is an integral part of any educational program. Good quality assessment always helps in improving the progress of learners and cannot be separated from learning and teaching. In order to make assessment process successful, continuous efforts are required to incorporate new strategies. Assessment of clinical competence is always challenging and medical teachers are always searching for ways to analyze the clinical capability of their students in the greatest way.[1] The aim of clinical assessment is to assess the development of professional attitudes and behaviors, core medical knowledge, clinical skills, problem-solving skills, decision-making skills, clinical reasoning, communication skills, and management skills.[2]

For the assessment of clinical competencies of medical students, different techniques are used. Traditional approaches comprise short cases, long cases, and the viva examination. Unfortunately, all of these methods faced criticism in the literature mainly due to their lack of standardization.[3]

The traditional long-case examination system has been used to assess medical students for over 150 years.[4] This method analyzes performance with actual patients and

allows students to collect information and make treatment plans under realistic situations. In the traditional long case, a student is allotted specific time with an actual patient in a clinical set-up and during that period, the student takes the history and accomplishes appropriate clinical examination of the patient. This unobserved time is usually of 30 minutes duration. In the following 30 minutes, the student presents his or her findings to the examiners and the examiner will ask questions about the patient and the associated topics in order to evaluate the student's knowledge, understanding, and clinical performance. The principal strength of the long case is that it assesses student's performance involving an actual patient.[5] However, over the past 30 years, it has become progressively obvious that the long-case practice is unable to yield satisfactory results that could achieve equitable levels of reproducibility. The main problem of long case is its low validity and non-generalizability. If the student scores well in one long case, it is not guaranteed that he will score well in the other long cases also.[6] Some major factors are involved that may explain why the long case faces certain issues with reproducibility, including case specificity of problem-solving, conflicts between examiners, and inconsistency in the facets of an encounter assessed.[7] Therefore, in order to improve the reliability and validity of assessment methods, it is the need of an hour to revisit older modalities and introduce new ways to promote students' engagement and learning.[6]

The literature review suggests that the reliability and rationality of the long case can be enhanced by other variations in long cases, such as the objectively structured long-case examination record; observed long case in which the history and examination component could be observed; long case with multiple examiners to reduce inter-rater variation; and multiple long cases with multiple examiners.[6] Keeping the aim of improving the educational impact of evaluation of clinical competency of medical students and making it more reliable and valid, we used the standardized, structured clinical case to assess the clinical capability of final-year students.

The objective of the current study is to compare standardized, structured clinical case and traditional long-case examination systems for clinical evaluation of final-year medical students by taking the perceptions of students and examiners and comparing the scores of the exam.

Methods

This interventional study was carried out at the Department of Obstetrics (Obs) and Gynecology (Gyne) in Shalamar Medical and Dental College, Lahore, from January 2021 to 2022. The study population was final-year MBBS students of 2020 and 2021. All students who completed Gyne/Obs clinical rotation were included in the study. Ethical approval was obtained from the Ethics Committee of Shalamar Medical and Dental College, Lahore, Pakistan. Students were assessed by the standardized, structured clinical case examination at the end of clinical rotation in Gyne/Obs. In the standardized assessment, four stations in sequence were used. Each station was of 5 minutes duration, and on each station, faculty members graded the student based upon a standardized, station-specific checklist. On station one, the detailed clinical scenario was given to the student in the written form and the students were asked to elicit a complete relevant history from the patient. On station two, students performed a physical examination on a standardized patient. On station three, students discussed the relevant investigation and their justification with the examiner for that particular patient and the last station was designed to measure the student's clinical reasoning process. Here, the student discussed the diagnosis and management of the case with the examiner. This same process was repeated sequentially for all students maintaining standardization and uniformity. The total marks for stations 1 and 4 were 30 and stations 2 and 3 were 20, making the total score of assessment by adding scores at each station equal to 100. Examiners at each station scored students according to the pre-validated checklist. After the assessment, a questionnaire was given to the students to record their perceptions. This questionnaire was developed by the validated questionnaire used in similar types of studies and was modified by the researcher according to the purpose.[8,9] Scores of the students assessed by the standardized. structured clinical case examination were compared to the scores of the students of the previous year who were examined by the traditional long case at the end of the clinical rotation of Gyne/Obs. The examiner and syllabus of both assessments were the same. Students' scores in both groups were tabulated and subjected to analysis. The perceptions of students and examiners, which were obtained by using the predesigned questionnaire using the Likert scale, were also evaluated.

Statistical analysis

Statistical Package for the Social Sciences version 20.0 was used for data analysis. The data were presented as percentages, mean, and standard deviation. Student's *t*-test was used to compare the scores of assessments of the students who were examined by structured long case with the scores of the students who were examined by traditional method and the significance was checked using a p-value < 0.05.

Results

The total number of students who were assessed by traditional long case was 144 (group A); 86 (60%) were female and 58 (40%) were male. In group B, the total number

of students was 157, with 95 (60.5%) females and 62 (39.5%) males. Mean age of the students was 23.2 ± 11.41 years.

The mean score obtained by the students who were assessed by the traditional long case was 64.3, while the mean score of students assessed in structured long case was 69.2 and so a difference of 5.11 was seen (Table 1), which was statistically significant (p = 0.001). Overall, in standardized, structured clinical case assessment, the students gained significantly higher scores.

The students' feedback was taken in the form of a structured questionnaire, and the responses are shown in Figure 1.

Almost 100% of the students agreed that the standardized, structured clinical case examination was a fair assessment method. They considered this method was helpful in identifying their areas of weakness and covered a wide range of skills. Students disagreed that this method was more stressful than other assessment methods; however, they pointed out that more time was needed at each station.

Faculty and examiner's feedback were taken in the form of a structured questionnaire, and the responses shown in Figure 2 were received.

As shown in Figure 2, the examiners considered the structured long case as a fairer and more standardized mode of assessment and covered broader areas of skills. The examiners also felt that the time of 5 minutes allocated at each station was short for the required task.

Discussion

When the standardized, structured clinical evaluation is used to judge the clinical competency in the busy clinical settings, the whole process is a more composite, resource-, and time-consuming practice than the traditional examination system. We selected this method of assessment for our students because it has almost all the components of a good assessment tool, like students' whole performance was observed in all stations; multiple examiners assessed the students, thus increasing the reliability; structured questions were asked at all stations; and marking was according to predefined structured marking schemes that improved the validity of the exam also.

This whole exercise of assessment aims to improve the quality of student's assessment by standardizing the student assessment system. It may also help strengthen processes for ongoing assessment. Students and examiners are essential stakeholders of the assessment process; therefore, an insight into this complicated process is needed to detect areas that

Table 1. *Statistics of mean scores obtained by the students of both groups.*

Groups	*N*	Mean	Standard deviation	Standard error mean
Group 1	144	64.31	11.07	0.92
Group 2	157	69.29	7.89	0.63

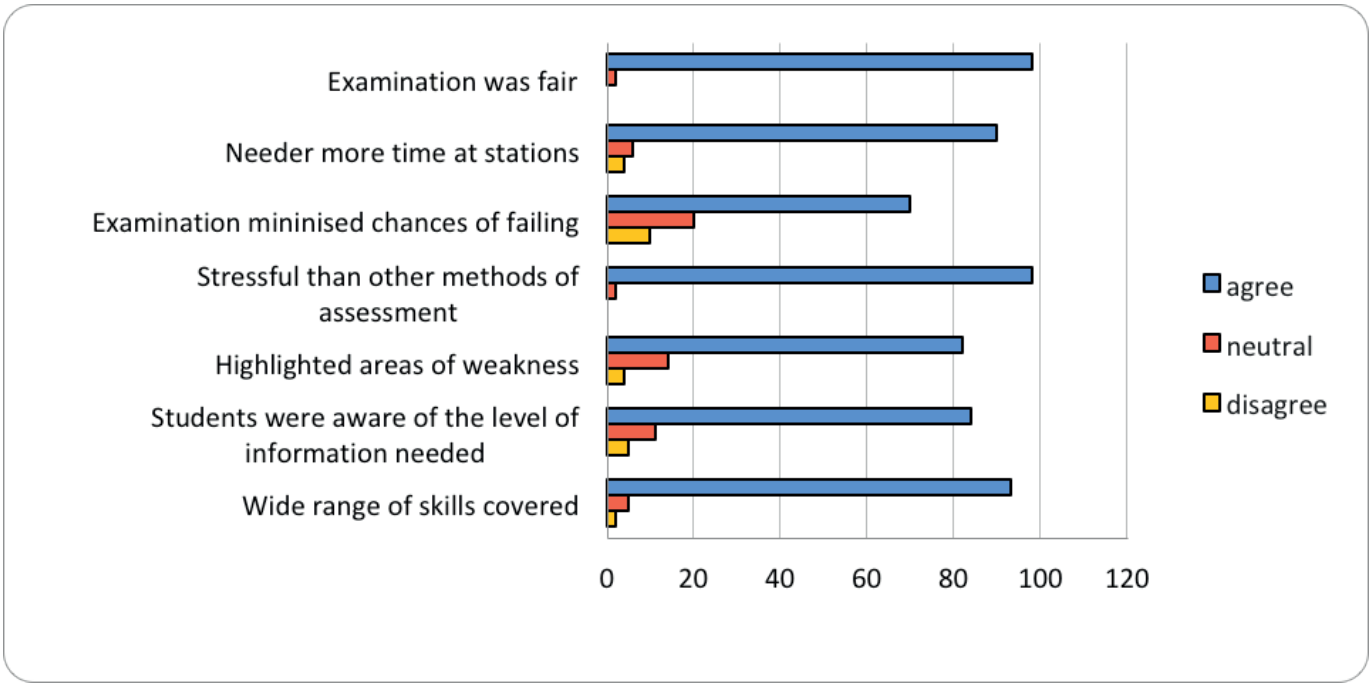

Figure 1. *Bar graph showing the responses of students of both groups regarding traditional and standardized, structured examination systems.*

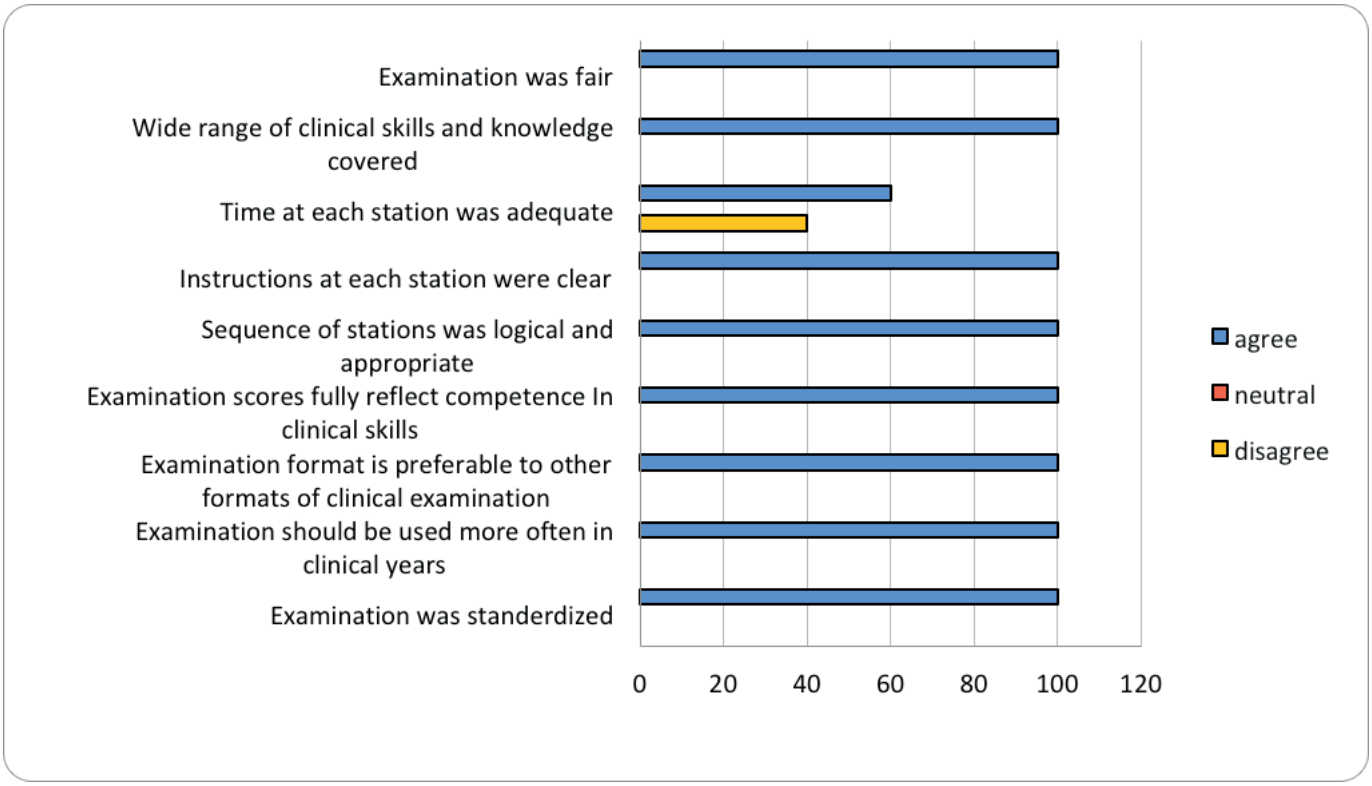

Figure 2. *Bar graph showing examiners' perceptions regarding traditional and standardized, structured examination systems.*

require further attention to upgrade the standard and quality of this examination technique by exploring the perception of both students and examiners. The present study showed a statistically significant ($p < 0.001$) difference in average marks attained by the students in the structured clinical assessment technique and the traditional long-case examination. Although students had an experience of objectively structured practical examination (OSPE), this form of long-case assessment was new for them; however, they scored well in the new format of assessment and the reason was standardization with maximum elimination of the examiner's bias and increased objectivity. All the students faced the same examiners, answered the set of targeted questions, and were awarded marks according to a predesigned checklist in the standardized long-case assessment at different stations. A study conducted in Brazil also concluded that modifying the format of the long-case examination increases its value in evaluating student's clinical capability.[10]

The exploratory study was conducted in 2019 at the Islamic International Medical College, Riphah International University, Islamabad, Pakistan, with final-year medical students in which their constructive assessment was taken through a long, structured interview and clinical examination during their clerkships. Generally, the students believed that these long, structured interview and clinical examination techniques were effective in augmenting their clinical skills and should be performed more often with minor modifications.[11]

A comparative study of developmental assessment in medicine using traditional long-case examination and objectively structured long examination record (OSLER) for final-year MBBS students also showed that the OSLER warrants a more universal evaluation of a student's clinical skills principally vital skills like communication.[12,13]

Pandya et al. [14] also concluded in their study that the structured clinical examination technique fulfills almost all features for a perfect clinical proficiency judgment without conceding objectivity, rationality, and reliability and can be used as an assessment tool in clinical assessments.

As a fundamental part of medical education, the importance of clinical training is acknowledged by all educational planners and assessing undergraduate students on performance is always challenging. Medical teachers always search for the new method that aligns the training during their professional work as physicians.[13,14] Taking this point into consideration, we redesigned our assessment method and tried to cover all domains of learning, including cognition, psychomotor, and attitude. Students are the principal stakeholders in assessment; their point of view is essential. The analysis of the responses obtained from the questionnaire used for taking the feedback from the students showed the acceptance by the end-users. In

addition, all the examiners agreed that this format is superior to other assessment methods and covered broader areas of knowledge and clinical skills.

However, responses from the students and examiners reflected that in some stations, more time is required, particularly in history-taking stations. History-taking is a time-consuming task that is difficult to be completed in a 5-minute station.

Although various assessment methods that test a range of competencies are available, like direct observations of clinical skills, mini clinical examination, OSPE, etc., the choice depends on the fitness for assessment.[15-17] Educating students and clinical teachers on new evaluation methods to improve the quality of our medical education for better preparedness of future physician and surgeons requires their familiarity with the implementation process, as well as encouragement and support by their educational institutions and administrators.

Conclusion

The standardized, structured clinical case examination is an effective tool for the clinical assessment of students; it improves students' scores and can reliably be integrated into the assessment system to assess the clinical competence of students. The students and examiners have positive perceptions toward the standardized, structured clinical case examination.

Limitation of the study

We compared the scores of students of the current year with the previous year students because of feasibility, and the results of the study were based on assessment in one discipline only by using the new method. In order to make the results more generalizable, more studies are required using a similar format in other disciplines also.

Acknowledgment

The authors are grateful to the examiners from the Shalamar Medical and Dental College Lahore, Pakistan, who took part in the study.

List of Abbreviations

Gyne/Obs	Gynecology and Obstetrics
OSLER	Objective Structured Long Examination Record
OSPE	Objectively Structured Practical Examination

Conflict of interest

None to declare.

Grant support and financial disclosure

None to disclose.

Ethical approval

Ethical clearance was obtained from the Institutional Review Board of Shalamar Medical and Dental College Lahore, Pakistan, vide letter no. SMDC-IRB/AL/153/2021 dated 11-01-2021.

Authors' contributions

FUQ: Conception and design of the study, acquisition of data, and important intellectual input.
SS: Design of the study, data acquisition and analysis, drafting of manuscript, and important intellectual input.
LRD: Acquisition of data and critical revision of the manuscript.
ALL AUTHORS: Approval of the final version of the manuscript to be published.

Authors' Details

Fozia Umber Qureshi[1], Shaherzad Sohail[2], Lubna Riaz Dar[1]

1. Professor of Obstetrics and Gynecology, Shalamar Medical and Dental College, Lahore, Pakistan
2. Associate Professor of Obstetrics and Gynecology Shalamar Medical and Dental College, Lahore, Pakistan

References

1. Andreassen P, Malling B. How are formative assessment methods used in the clinical setting? A qualitative study. Int J Med Educ. 2019;10:208–15. https://doi.org/10.5116/ijme.5db3.62e3
2. Newble DI. Assessing clinical competence at the undergraduate level. Med Educ. 1992;26(6):503–11.
3. Dare AJ, Cardinal A, Kolbe J, Bagg W. What can the history tell us? An argument for observed history-taking in the trainee intern long case assessment. N Z Med J. 2008;121(1282):51–71.
4. Tey C, Chiavaroli N. Ryan A. Perceived educational impact of the medical student long case: a qualitative study. BMC Med Educ. 2020;20:257. https://doi.org/10.1186/s12909-020-02182-6
5. Norcini J. The death of long case. BMJ. 2002;324(7334):408–9. https://doi.org/101136/bmj.324.7334.408
6. Thornton S. A literature review of the long case and its variants as a method of assessment. Educ Med. 2012;4:5–14. https://doi.org/10.5959/ejmj.v41.9
7. Majumder MAA, Kumar A, Krishnamurthy K, Ojeh N, Adams OP, Sa B. An evaluative study of objective structured clinical examination (OSCE): students and examiners perspectives. Adv Med Educ Pract. 2019;10:387–97. https://doi.org/10.2147/AMEP.S197275
8. Hryncha P, Bright J, MacIver S, Woo S. Student satisfaction with an structured clinical examination in optometry. Optometr Educ. 2021;46(2):27–32.
9. Omu AE, Al-Azemi MK, Omu FE, Al-Harmi J, Diejomaoh MFE. Attitudes of academic staff and students towards the Objective structured clinical examination (OSCE) in obstetrics and gynaecology. Creat Educ. 2016;7:886–97. https://doi.org/10.4236/ce.2016.76093
10. Khan A, Ayub M, Shah Z. An audit of the medical students' perceptions regarding objective structured clinical examination. Educ Res Int. 2016;2016:e4806398. https://doi.org/10.1155/2016/4806398
11. Troncon EA, Dantas RO, Figueiredo FC, Ferriolli E, Moriguti LC, Martinelli ALC, et al. A standardized, structured long-case examination of clinical competence of senior medical students, Med Teach. 2000;22(4):380–5. https://doi.org/10.1080/014215900409483
12. Shadab W, Noor AA, Waqqar S, Saikh MG. Structured long interview and clinical examination (SLICE) as formative assessment tool in clinical clerkship: medical students

perspective. JPMA. 2021;71(8):2000–4. https://doi.org/10.47391/JPMA.583
13. Traynor M, Galanouli D, Rice B, Lynn F. Evaluating the objective structured long examination record for nurse education. Brit J Nurs. 2016;25(12):681–7. https://doi.org/10.12968/bjon.2016.25.12.681
14. Pandya H. Comparative evaluation of structured clinical case examination with traditional long-case examination for clinical competence assessment. J Integr Health Sci. 2019;7:13–8.
15. Teoh NC, Bowden FJ. The case for resurrecting the long case. BMJ. 2008;336(7655):1250. https://doi.org/10.1136/bmj.39583.596111.94
16. Torabizadeh C, Ghodsbin F, Javanmardifard S, Sherazi F. The barriers and challenges of applying new strategies in the clinical evaluation of nursing students from the viewpoints of clinical teachers. Iran J Nurs Midwifery Res. 2018;23(4):305–10. https://doi.org/10.4103/ijnmr.IJNMR_17_17
17. Rogausch A, Beyeler C, Montagne S, Jucker-Kupper P, Berendonk C, et al. The influence of students' prior clinical skills and context characteristics on mini-CEX scores in clerkships - a multilevel analysis. BMC Med Educ. 2015;15:208. https://doi.org/10.1186/s12909-015-0490-3