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Comparative study of objectively structured viva examination versus traditional viva-examination among third MBBS part-I students in community medicine subject

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Abstract

Background & Objective: Assessment is a critical part of medical education which directly impacts student learning and outcomes. Traditional Viva Examination (TVE) is practiced widely but lacks standardization and may be subject to examiner bias. The Objectively Structured Viva Examination (OSVE) provides a structured, uniform, and competency-based approach aimed at improving objectivity and fairness. This study aimed to compare OSVE and TVE among third-year Bachelor of Medicine, Bachelor of Surgery (MBBS) part I students in community medicine with respect to assessment outcomes and the perceptions of students and faculty.

Materials & Methods: A convergent mixed-method educational interventional study was carried out among 205 third MBBS Part I students. All students were assessed through both OSVE and TVE during their formative assessments using a pre-defined marking pattern. Quantitative data were analyzed using mean and Standard Deviation (SD). A paired t-test was applied, and $p < 0.05$ was considered statistically significant. Student and faculty perceptions were obtained using pre-validated 5-point Likert scale questionnaires. Qualitative data were obtained from Focus Group Discussions (FGDs) and analyzed by thematic analysis.

Results: The mean OSVE scores (9.54 ± 2.43) were significantly higher than TVE scores (8.28 ± 3.67) ($p < 0.001$). A higher proportion of students scored above the mean in OSVE compared to TVE. Students perceived OSVE to be more structured, systematic, fair, comprehensive, and less stressful with minimized examiner bias. However, concerns regarding rigidity, limited interaction, and difficulty in scoring for non-readable topics were reported. Faculty members expressed positive support for OSVE, particularly regarding transparency, standardization, and feasibility for formative assessments.

Conclusion: OSVE provides a more objective and consistent assessment method compared to TVE. It is associated with improved student performance, reduces bias, and is preferred by both students and faculty for formative assessment. However, modifications regarding flexibility and preparatory training sessions are needed for potential implementation in summative assessments.

Keywords: educational measurement; clinical competence; community medicine; students, medical; formative assessment

Introduction

Assessment has always been an essential component of any educational program. In medical education, student assessment is particularly critical, as it directly shapes learning outcomes and the acquisition of clinical and academic skills. In India, the revised undergraduate medical curriculum guidelines place strong emphasis on assessing all competency domains through both

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formative and summative examinations [1, 2]. The viva voce examination has long been one of the most widely used assessment methods in medical education. Its one-to-one format between examiner and student creates opportunities to explore a broad range of topics and probe understanding at varying depths [3]. However, TVE is not without its challenges. The examination environment often involves inconsistencies in the time allocated to each student, the number and difficulty level of questions asked, and whether questions adequately cover the syllabus [4]. Students frequently experience anxiety and discomfort during oral examinations [4, 5], and the degree of this variability tends to differ from one examiner to another. Such inconsistencies can mask a student's true capabilities and understanding of the subject, ultimately resulting in inequitable evaluation outcomes [4, 6]. Taken together, these issues highlight the notable limitations of TVE, including concerns related to validity, objectivity, comprehensiveness, inter-rater reliability, repeatability, and potential gender bias, all of which may adversely affect student performance. [3–6] OSVE was developed to address these shortcomings by offering a more equitable assessment environment through a structured set of predetermined questions and a standardized marking scheme [3]. This approach enhances objectivity and consistency by applying uniform evaluation criteria across all candidates, thereby reducing examiner bias and ensuring a fairer assessment experience [4]. Unlike traditional methods, which tend to focus primarily on recall-based knowledge, OSVE enables broader syllabus coverage and the assessment of higher-order cognitive skills. This format has been explored in several studies, particularly among medical students [4–6]. That said, effective implementation of OSVE requires careful planning and clear instructions for examiners to ensure fairness and reliability throughout the process [7]. Given these considerations, comparing OSVE with TVE is essential to systematically address the limitations of traditional oral assessment. Third MBBS Part I students were selected for this study because they possess adequate foundational knowledge and prior exposure to TVE, which facilitates a meaningful comparison between the two formats. Community Medicine was chosen as the subject area due to its broad syllabus, which integrates both cognitive and applied competencies within the CBME framework. Findings from this study may provide evidence-based recommendations for incorporating OSVE into undergraduate medical curricula.

More broadly, OSVE represents a progressive step toward improving assessment practices by promoting fairness, enhancing student performance and satisfaction, supporting effective teaching strategies, and ultimately contributing to better educational outcomes and the preparation of well-rounded healthcare professionals. The study objectives were: 1) to compare the assessment outcomes of OSVE and TVE using a pre-defined marking scheme in formative assessment among third MBBS Part I students; and 2) to assess the perceptions of students and faculty regarding both examination formats using pre-validated questionnaires.

Materials & Methods

Design and setting(s)

A convergent parallel mixed-methods educational interventional study was conducted, integrating quantitative and qualitative approaches to compare OSVE with TVE among medical students. The study was carried out from January 1, 2025 to June 15, 2025 in the Department of Community Medicine, Shantabaa Medical College, Amreli. Both quantitative and qualitative data were collected between April 24 and April 28, 2025, during the scheduled formative assessment. Both datasets were collected simultaneously and analyzed independently, with integration occurring at the interpretation stage to enable a comprehensive assessment of student performance and perceptions. The quantitative component examined differences in examination scores between OSVE and TVE, while the qualitative component explored students' and faculty perceptions, experiences, and acceptability of OSVE. This design allowed triangulation of objective performance outcomes with subjective experiential insights, thereby strengthening the validity and educational relevance of the findings.

Participants and sampling

All third-year MBBS Part I students (n = 205) and four faculty members in the Department of Community Medicine were included in the study. Inclusion criteria: Students who were willing to participate and were present on the day of assessment were included after providing informed verbal consent. Exclusion criteria: Students who were absent during the assessment were excluded. Incomplete or missing quantitative data were also excluded. For the quantitative component, all eligible students present during the formative assessment were included. For the qualitative component, Focus Group Discussions (FGDs) were conducted to explore

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student perceptions of OSVE in comparison with TVE. Purposive sampling was used to select students who had experience with both assessment formats and were willing to share their perspectives. A total of four FGDs were conducted, each comprising eight students, resulting in 32 participants. Each discussion lasted approximately 45–50 minutes and was held at the end of the formative examination, following informed verbal consent. Confidentiality and anonymity were maintained throughout. Data collection continued until thematic saturation was reached, with no new themes emerging after the fourth FGD.

Tools/Instruments

An OSVE question bank was developed to cover the relevant syllabus topics. Topics were distributed among the four participating faculty members, who then exchanged topics with one another for peer review and validation. The question bank was organized according to core and non-core competencies and stratified by difficulty level, covering must-know, desirable-to-know, and nice-to-know areas of the subject. A self-administered questionnaire using a five-point Likert scale was used to assess student and faculty perceptions, where 1 represented 'strongly disagree' and 5 represented 'strongly agree.' The questionnaire was developed by the research team based on a review of the literature and expert input, and covered domains related to fairness, objectivity, stress, learning impact, and acceptability of OSVE. Open-ended questions were used to guide the FGDs, covering students' experiences with OSVE compared to TVE, perceived fairness and objectivity, stress levels, difficulties encountered, and opinions regarding the inclusion of OSVE as an assessment method. Both questionnaires were reviewed by subject matter experts and medical education specialists to assess relevance, clarity, and validity.

Data collection methods

Data were collected using pre-validated, pre-designed quantitative and qualitative instruments. All 205 students underwent both OSVE and TVE during the formative assessment, covering the same syllabus content. The internal assessment allocation of 40 marks was equally divided, with 20 marks assigned to each format. This decision was made by the research team in consultation with the head of department and other faculty members to minimize bias and allow equivalent comparison of both assessment formats. Participating faculty members were sensitized and trained prior to the study. Students were informed about the purpose of the study, the OSVE format, evaluation criteria, and the assessment process. Both assessments were administered simultaneously, with students assessed independently without interaction. The OSVE time limit was fixed at eight minutes, while the duration of each TVE session was recorded. Scores from both assessments were documented for comparison. Following completion of both assessments, perception questionnaires were administered to students and faculty, after which FGDs were conducted in a seminar room within the Department of Community Medicine.

Data analysis

Data were entered into Microsoft Office 2021 (Microsoft Corp., Redmond, WA, USA) and analyzed using Jamovi version 2.3.26. [8] Mean scores and standard deviations were calculated for each assessment method, and scores were compared using a paired t-test. A p-value of less than 0.05 was considered statistically significant. Frequencies and percentages were used to summarize perception data. For qualitative analysis, audio recordings from the FGDs were transcribed verbatim. Data familiarization was achieved through repeated review of the transcripts, after which data were uploaded to WeftQDA [9] for coding. Group-wise coding produced four sets of codes (G1–G4), one for each FGD, and each participant was assigned an anonymized numeric code from S1 to S8. Initial codes were generated through the software, then grouped and systematically reviewed to ensure internal homogeneity and external heterogeneity across themes. Final themes, categories, and subcategories were identified and named, with key findings illustrated through representative quotations. Thematic analysis followed the six-phase framework throughout this process. Trustworthiness was established through peer debriefing among experienced researchers, data triangulation via independent coding by two researchers followed by thorough discussion, and maintenance of an audit trail documenting the coding process and theme development.

Results

All 205 eligible third-year MBBS Part I students participated in both the OSVE and TVE assessments, of whom 107 were male and 98 were female. The mean OSVE score was 9.54 ± 2.43, compared to a mean TVE score of 8.28 ± 3.67. A paired t-test revealed a statistically significant difference between the two methods ($t = -4.09$, $df = 204$, $p < 0.001$), indicating that

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students performed significantly better under OSVE conditions. This was further supported by the finding that 62.4% (128/205) of students scored above the OSVE mean, compared to 48.3% (99/205) in TVE, suggesting that OSVE had a positive impact on student performance (**Table 1**). The duration of TVE ranged from 3 to 12 minutes per student, whereas a fixed time of 8 minutes was allocated for OSVE.

Table 1. Comparison of Student Performance in OSVE and TVE (n = 205)

Variables	OSVE	TVE
Number of students (N)	205	205
Mean score ± SD	9.54 ± 2.43	8.28 ± 3.67
Scores above mean, % (n/N)	62.4 (128/205)	48.3 (99/205)
Scores at or below mean, % (n/N)	37.6 (77/205)	51.7 (106/205)
t value (df)	− 4.09 (204)	—
p value	p < 0.001	—

Note: Paired t-test was used to compare mean scores between OSVE and TVE.

Abbreviations: N, number of students; SD, standard deviation; OSVE, objective structured viva examination; TVE, traditional viva examination; df, degrees of freedom; p, probability value.

Quantitative assessment of performance

Student perceptions of OSVE compared to TVE: Anonymous written feedback was collected from students at the end of both assessments. The Cronbach's alpha for the Likert scale questionnaire was 0.72, indicating acceptable internal consistency. **Figure 1** presents student responses to comparative statements about OSVE and TVE.

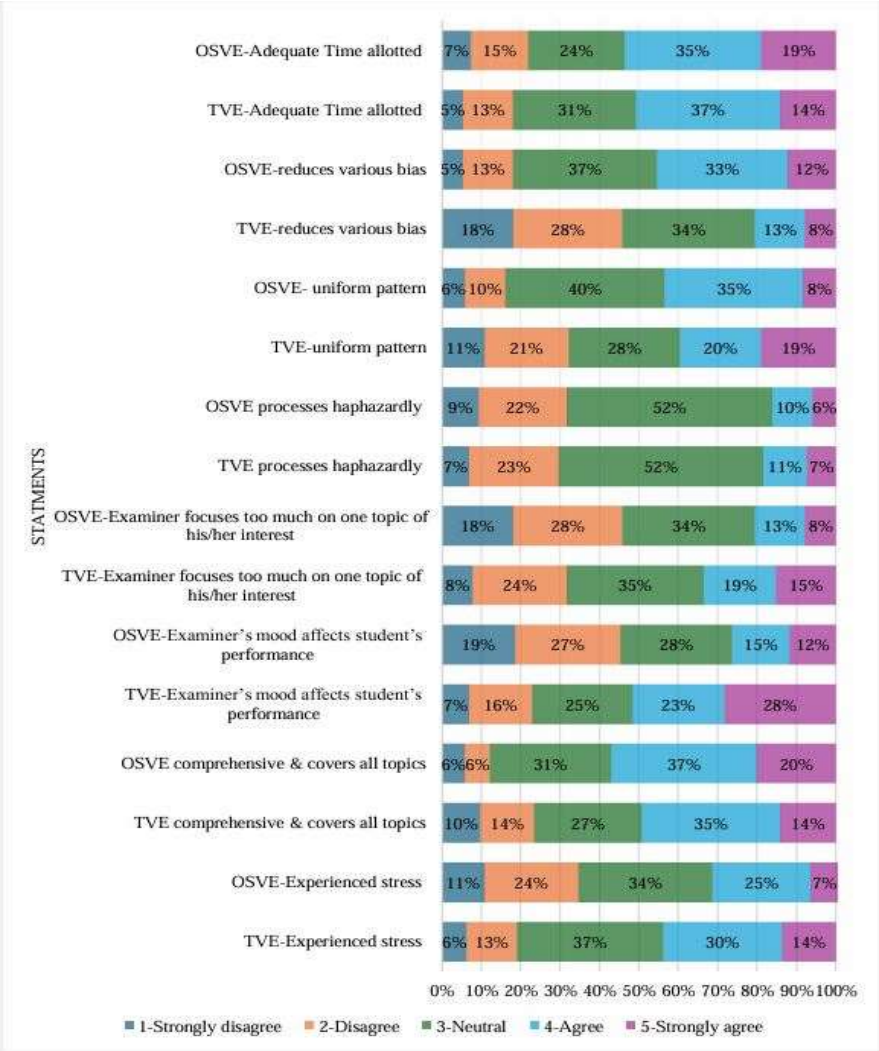

Figure 1. Student's Perception of the OSVE V/S TVE based on Likert Scale

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Regarding time adequacy, 54% of students agreed or strongly agreed that OSVE allocated sufficient time, compared to 51% for TVE. Nearly 45% agreed or strongly agreed that OSVE reduced bias more effectively than TVE, for which only 21% expressed similar agreement.

Comprehensive syllabus coverage was endorsed by 57% of students for OSVE versus 51% for TVE. Uniformity of examination pattern was perceived positively by 43% of students for OSVE, compared to 29% for TVE. Stress levels were notably lower in OSVE, with only 32% of students reporting stress, compared to 44% in TVE. Examiner mood was perceived as a performance-influencing factor by 43% of students in TVE, versus 27% in OSVE, reflecting greater objectivity in the structured format. Only 21% of students felt that OSVE examiners focused on personal interests, compared to 34% for TVE, further suggesting reduced examiner subjectivity in OSVE. A neutral response (52%) was recorded for both formats regarding whether the process was conducted haphazardly, possibly reflecting mixed experiences or limited clarity in student perception. **Figure 2** presents student perceptions of OSVE as an effective assessment tool. Overall, 51% of students agreed or strongly agreed that OSVE is an effective method of assessment.

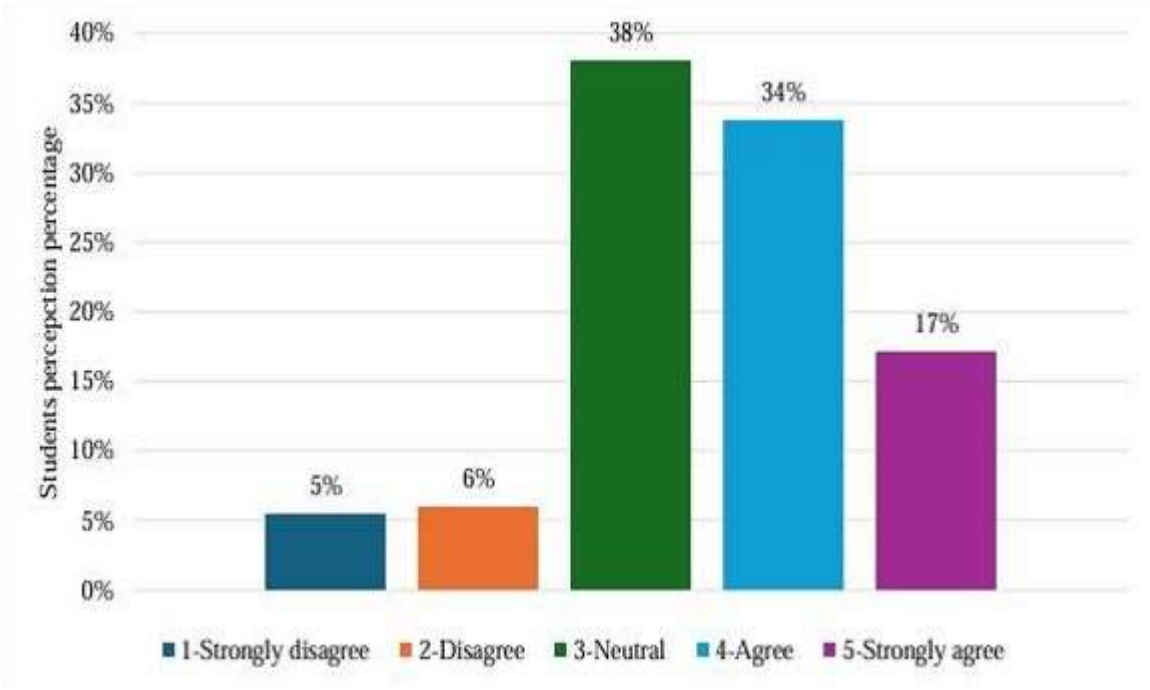

Figure 2. Students Perception of the OSVE as an Effective Assessment Tool

Faculty perceptions of OSVE compared to TVE: **Figure 3** illustrates faculty perceptions of OSVE. All four faculty members strongly agreed that OSVE is a structured and systematic examination format. There was unanimous agreement or strong agreement that OSVE enables better time management, ensures comprehensive syllabus coverage, provides a uniform examination experience, offers a more transparent and objective assessment process, and improves standardization. Regarding effective competency evaluation and feasibility, 50% agreed, 25% strongly agreed, and 25% remained neutral, reflecting broad support alongside recognition of the need for adequate training. On the question of examiner bias reduction, 75% of faculty agreed and 25% remained neutral, indicating confidence in the fairness of the structured format. Responses regarding OSVE scoring were mixed, with 50% agreeing or strongly agreeing and 50% remaining neutral, possibly reflecting unfamiliarity with structured scoring checklists.

Similarly, perceptions of stress during OSVE administration were divided, with 50% agreeing and 50% remaining neutral, with some attributing this to the time required for chit preparation. Notably, all faculty agreed or strongly agreed on the value of integrating OSVE into both formative and summative assessments.

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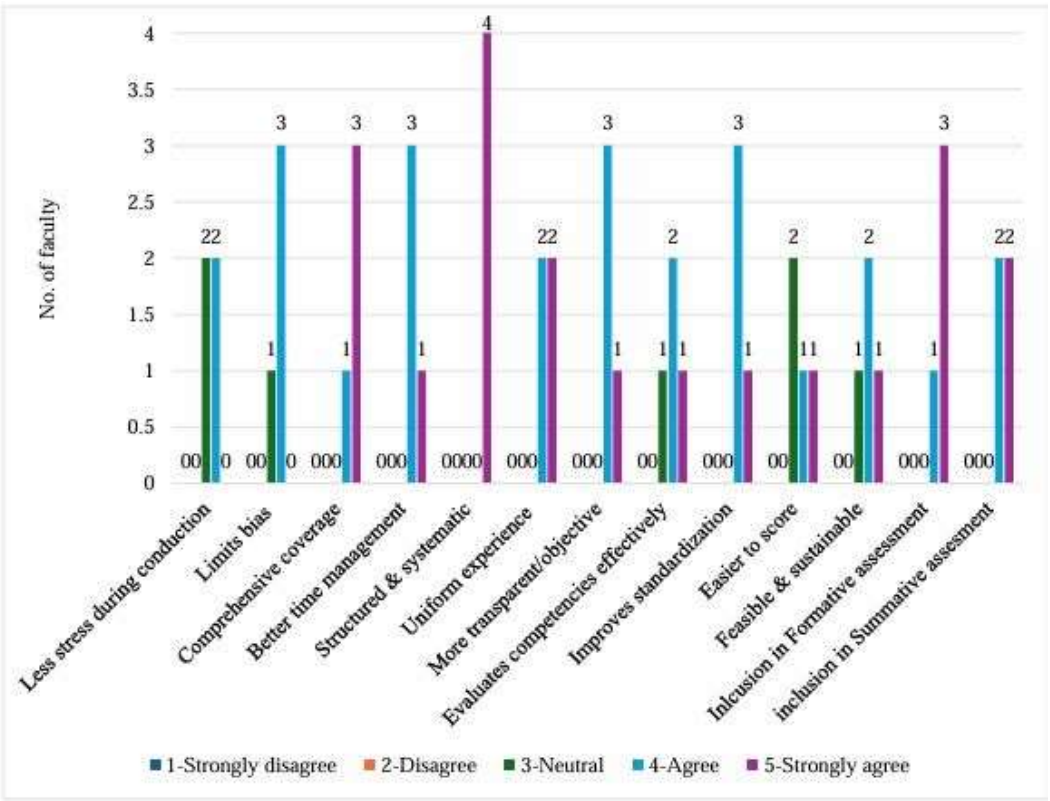

Figure 3. Faculties' Perception of the OSVE v/s TVE based on Likert Scale

Thematic analysis of student perceptions

Thematic analysis of FGD data yielded five themes reflecting student views on the structure, process, emotional experience, objectivity, and acceptability of OSVE compared to TVE (**Table 2**).

Standardized structural design and equity

Students perceived OSVE as a more structured and consistent assessment method, characterized by stepwise rotation, pre-defined questions, a standardized marking scheme, equal time allocation, and comparable question difficulty levels. This structure was seen as ensuring uniform assessment conditions, enhancing fairness, and minimizing examiner bias.

> *"All students are rotated systematically, step-wise structure nature. All types of questions included in the chits."* (**Participant S3, G1**)

Students also appreciated the balanced distribution of question difficulty levels and broad syllabus coverage, though some acknowledged that coverage was partly dependent on randomly allocated questions. "Easy, medium, and higher-level questions were asked with appropriate marks allotted to each level." (S1, G3)

Cognitive load and process constraints

Students reported time-management challenges arising from the need to simultaneously read, interpret, and respond within a fixed time frame.

Limited cognitive flexibility was a recurring concern, as an inability to answer initial questions or shift topics negatively affected student confidence and overall performance.

> *"Not enough time for me, required time for opening of chit, read and thinking answer."* (**Participant S4, G4**)

Emotional experience and psychological safety

Students described varied emotional responses to OSVE. Stress was most commonly triggered by unfamiliar topics or difficulty with initial questions; however, many students perceived OSVE as less stressful and more predictable than TVE.

> *"As per my exam viva, I felt high stress because if first chit question is not answerable, then anxiety increases. .... But Less stress as compared to traditional."* (**Participant S2, G3**)

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Table 2. Students' Perceptions of OSVE Compared to TVE Based on Focus Group Discussions (n = 32)

Theme	Category	Subcategory	Representative Codes
1. Perceived Standardization and Equity	Structural organization	Systematic examination process	Step-wise rotation, predefined questions, checklist-based marking
		Uniform examination experience	Same time, same difficulty, equal marks
	Content representation	Balanced difficulty levels	Easy–moderate–difficult distribution
		Comprehensive syllabus coverage	Wide topic inclusion, curriculum alignment
2. Cognitive Load and Process Constraints	Time management	Perceived adequacy of time	Fixed duration, time pressure
	Cognitive flexibility	Inability to shift questions	No option to change topic, recovery difficulty
3. Emotional Experience and Psychological Safety	Examination stress	Stress triggers	Non-readable topics, first-question anxiety
	Overall satisfaction	Comparative comfort	Less stress than traditional viva
4. Perceived Objectivity and Examiner Neutrality	Examiner behaviour	Reduced bias	No favouritism, neutral assessment
	Assessment fairness	Transparency	Objective scoring, uniform criteria
5. Conditional Acceptability of OSVE	Educational value	Formative usefulness	Self-evaluation, exam preparation
	High-stakes concerns	Summative limitations	Rigid format, scoring challenge

Note: Themes and categories were derived through thematic analysis of focus group discussion transcripts. No inferential statistical tests were applied to qualitative data.
Abbreviations: n, number of participants; OSVE, objective structured viva examination; TVE, traditional viva examination; FGD, focus group discussion.

Perceived objectivity and examiner neutrality

Students perceived OSVE as reducing assessment bias, including favoritism and examiner mood variability. Transparent scoring and uniform evaluation criteria were seen as key contributors to enhanced fairness.

> *"Marks are given based on answers, not examiner mood."* (**Participant S2, G2**)

Conditional acceptability of OSVE

Students expressed cautious acceptance of OSVE. Most supported its use as a formative assessment tool, valuing its role in self-evaluation and examination preparation. However, concerns were raised about its suitability for high-stakes summative assessments, particularly given the rigidity of highly specific questions and associated scoring challenges.

> *"Include in term-ending for knowing the various type of question but not in summative."* (**Participant S3, G1**)

Advantages and disadvantages of OSVE

Table 3 summarizes the advantages and disadvantages of OSVE as identified by students. The most commonly reported advantage was balanced question difficulty and comprehensive topic coverage (87.5%), followed by time efficiency (78.1%), usefulness in examination preparation (43.7%), the ability to re-read questions via the chit sheet (31.2%), and ease of scoring for familiar topics (25%).

Several disadvantages were also identified. The most frequently reported concern was difficulty in scoring when unfamiliar topics appeared (68.7%). Additionally, 43.7% of students felt that performance was partly dependent on luck, 40.6% reported feeling restricted by the inability to shift questions, 28.1% noted the absence of examiner prompts as a drawback, and 21.5% expressed dissatisfaction with the limited opportunity to elaborate on answers. Only one student (3.1%) raised concern about the absence of examiner–student interaction.

Table 3. Students' reported advantages and disadvantages of OSVE compared to TVE based on open-ended responses (n = 32)

Advantages	%	Disadvantages	%
Balanced question levels (easy, medium, hard) and covered all topics	87.5	Difficult to score marks if topic not read by student	67.6
Time-saving	78.1	No opportunity to elaborate answers	21.8
Opportunity to re-read questions	31.3	Topic/question shifting not allowed	40.6
Easy to score if questions/topic known	25.0	Scoring dependent on luck	43.7
Helpful for preparation of different exam questions	43.7	No prompting or leading questions can be asked by faculty	28.1
—	—	No interaction between student and faculty	3.1

Note: Percentages were calculated based on the total number of respondents (n = 32). Multiple responses were permitted; therefore, percentages do not sum to 100.
Abbreviations: n, number of participants; OSVE, objective structured viva examination; TVE, traditional viva examination.

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"Question can't be asked second time to the examiner due to fear, but it is possible to read second time in this and allows for better score." (**Participant S2, G3**)

"We have to give a specific answer. We know the topic but can't recall the specific answer — that doesn't mean we don't know the whole topic." (**Participant S3, G1**)

"Can't elaborate the answer and give only a specific answer." (**Participant S7, G3**)

"The limited interaction between examiner and student. Interaction is the main purpose of viva, not possible in objectively structured viva examination." (**Participant S4, G1**)

Integration of quantitative and qualitative findings

Quantitative and qualitative findings showed clear convergence. OSVE was associated with significantly higher scores than TVE, and qualitative data attributed this improvement to the structured format, standardized marking, and reduced examiner bias. At the same time, student-reported concerns regarding rigidity and limited examiner–student interaction suggest that while OSVE is well suited for formative assessment, its application in summative contexts may require modification, such as the adoption of hybrid formats. Taken together, the integrated evidence supports OSVE as a valid and acceptable formative assessment tool with conditional applicability for summative use.

Discussion

This study aimed to compare the Objectively Structured Viva Examination (OSVE) with the Traditional Viva Examination (TVE) among third-year Part I MBBS students in Community Medicine. The competency-based medical education (CBME) framework emphasizes the evaluation of students across cognitive, psychomotor, and affective domains through comprehensive assessment methods [1]. The present study demonstrated that OSVE offers several advantages over TVE in terms of both student performance and perception.

Mean scores were significantly higher in OSVE (9.54 ± 2.43) compared to TVE (8.28 ± 3.67), indicating that the structured format enhanced student performance and provided a more equitable assessment of competencies. These findings are consistent with those of Bagga et al. [10] and Chhaiya et al. [2], who reported higher scores and greater student satisfaction with OSVE formats in pharmacology and forensic medicine, respectively. The standardization of questions, uniform difficulty levels, and reduction of examiner bias inherent to OSVE likely account for this performance difference. Shaikh [5] and Sule et al. [3] similarly found that structured viva formats improved transparency and consistency relative to traditional formats. Madhukumar et al. [11] further reported that pre-defined questions, explicit scoring criteria, and reduced examiner subjectivity contributed to improved student performance and satisfaction. A systematic review and meta-analysis by Khan and Ramachandran [12] corroborated these findings, demonstrating higher validity and reliability for structured viva examinations compared to traditional formats.

Student perceptions in the present study reinforced the advantages of OSVE. Students identified it as a more systematic and uniform assessment method with balanced question difficulty and broader topic coverage. Comparable perceptions were reported by Vankudre et al. [13], where the majority of students valued the structured oral examination for its fairness and comprehensive coverage. Similar findings regarding acceptability and perceived fairness in structured formats have also been documented by Khan and Ramachandran [12]. These perceptions are particularly relevant within the CBME framework, where constructive alignment between assessment methods and learning outcomes is a core principle.

The present study also found that fewer students reported stress during OSVE than during TVE, suggesting that the structured format was associated with lower examination anxiety. Students attributed this to the predictability of the format, equal time allocation, and reduced examiner subjectivity. Dangre-Mudey et al. [4] and Madhukumar et al. [11] reported similar findings, noting that reduced anxiety may allow students to perform closer to their true level of competence, thereby enhancing the validity of the assessment.

Faculty perceptions supported the integration of OSVE into formative assessment, with recognition of its transparency, standardization, and alignment with CBME principles. However, some faculty expressed reservations regarding its feasibility for summative assessment, citing the rigid format, time-intensive preparation, and logistical demands. These concerns are

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consistent with those raised by Sharma et al. [7] and Bansal et al. [14], who noted that while structured and hybrid viva formats improve objectivity and reliability, their implementation in high-stakes summative contexts requires adequate training and institutional resources.

While students broadly supported the inclusion of OSVE in formative assessment, a substantial proportion expressed reservations about its use in summative examinations. Concerns centered on structural rigidity, limited examiner–student interaction, restricted opportunities for elaboration, and the potential disadvantage of encountering unfamiliar or less readable topics. Previous studies have similarly noted that although structured viva formats enhance objectivity and minimize examiner bias, they may constrain probing depth and adaptive questioning relative to traditional formats [11, 12, 14]. The qualitative findings of this study reinforced these observations. Students acknowledged the fairness and transparency of OSVE while identifying challenges related to limited interactional flexibility. Shaikh [5] reported comparable perceptions, noting that structured viva examinations improve standardization but may restrict the depth of student responses and limit the examiner's capacity for dynamic questioning. Taken together, these findings suggest that successful implementation of OSVE in summative contexts will require structured orientation programs, adequate student familiarization, and carefully designed provisions for limited examiner–student interaction within defined parameters.

The integrated quantitative and qualitative evidence from this study supports OSVE as a reliable, objective, and educationally sound formative assessment strategy, well aligned with the principles of CBME. With thoughtful refinement to balance standardization with flexibility, OSVE holds potential for broader and more acceptable application in undergraduate medical education.

Several limitations should be acknowledged. The single-institution setting and subject-specific context of Community Medicine may limit the generalizability of findings. Integration of quantitative and qualitative components was based primarily on interpretive convergence, which may have been subject to researcher judgment. Although thematic rigor was maintained, the qualitative component involved a limited number of participants, and the findings may not fully capture the diversity of student perspectives. The rigid structure of OSVE, particularly when questions were drawn from less familiar or lower-priority topics, suggests a need for enhanced orientation sessions to improve student understanding and acceptance of the format. Additionally, this study assessed only short-term outcomes, including immediate performance and perception; the long-term impact on learning outcomes and skill retention was not evaluated and warrants further investigation. Finally, issues of scalability, including examiner workload, feasibility across large cohorts, and sustainability of implementation, were not formally assessed.

Conclusion

This comparative study demonstrated that OSVE offers significant advantages over TVE among third-year MBBS students in Community Medicine. A statistically significant improvement in mean scores was observed with OSVE, suggesting that its structured and objective format enhanced student performance. Students perceived OSVE as systematic, fair, and comprehensive, with balanced question difficulty and reduced examiner bias. Faculty recognized its transparency, objectivity, and potential for standardization within the CBME framework. Identified challenges included difficulty scoring unfamiliar topics, limited examiner–student interaction, and the inability to redirect questions. Overall, both students and faculty expressed satisfaction with OSVE and supported its adoption as an effective formative assessment method.

Future research should focus on evaluating OSVE in summative examination contexts, including hybrid viva formats that incorporate structured examiner–student interaction. Multi-centric studies are needed to improve generalizability, and longitudinal research examining repeated exposure, learner experience, and faculty training interventions would further strengthen the evidence base for integrating OSVE within the CBME framework.

Ethical considerations

Ethical approval was obtained from the Institutional Ethics Committee of Shantabaa Medical College, Amreli (Approval No. SMed/IEC/85/1/25, dated 04 April 2025). Participation was entirely voluntary, and all participants were clearly informed about the study purpose, procedures, and their right to withdraw at any time without academic or personal consequences. Confidentiality and anonymity were maintained throughout the study. Informed verbal consent was obtained from all participants prior to data collection. Verbal consent was considered appropriate given that the study posed minimal risk, was carried out as part of

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routine formative assessment, and involved no deviation from standard academic assessment practices.

Artificial intelligence utilization for article writing

This manuscript follows ethical principles and guidelines for the use of artificial intelligence. ChatGPT (OpenAI) was used solely for language refinement and grammatical editing. No AI tool was used for data generation, analysis, interpretation, or any scientific decision-making.

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Conflict of interest statement

The authors declare no conflict of interest.

Author contributions

YJG served as the principal investigator. PR, MC, TK, and YM contributed as advisors in the conduct of the study and preparation of the manuscript.

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None.

Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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