ORIGINAL ARTICLE

A comparative study of objectively structured and traditional viva voce for second-year MBBS students

Meenakshi Sharma[1], Amit Kumar Singh[2,*], Abhay Mudey[3]
[1]Autonomous State Medical College, Lakhimpur Kheri, Uttar Pradesh, India
[2]Maharshi Vashishtha Autonomous State Medical College, Basti, Uttar Pradesh, India
[3]Jawaharlal Nehru Medical College, Wardha, Maharashtra, India

[*]Maharshi Vashishtha Autonomous State Medical College, Rampur
Basti, Uttar Pradesh
272124
India

Tel: +919839812391
Email: dramitsingh.in@gmail.com

Background: The traditional viva voce (TVV) has been criticised for its subjectivity and susceptibility to academic and non-academic biases related to both teachers and students. To address these concerns, the objectively structured viva voce (OSVV) format has been proposed. This study compared the effectiveness of OSVV with that of TVV and explored the perceptions of second-year MBBS students and faculty members towards OSVV.

Method: A cross-sectional comparative study was conducted with 102 second-year MBBS students. Each student underwent both TVV and OSVV assessments. The mean scores obtained through both methods were calculated. A Likert scale-based questionnaire was administered to students and faculty members to assess their perceptions of OSVV. The results were analysed using percentages and frequencies.

Results: The mean score achieved in OSVV (12.80 ± 1.73) was significantly higher than that in TVV (11.30 ± 1.80). A total of 76.4% of students strongly agreed that OSVV was fairer than TVV. All faculty members (100%) strongly agreed that OSVV was a more structured method, comprehensively covering the syllabus across various levels of difficulty.

Conclusion: OSVV was found to be a more effective and equitable method of viva assessment compared with TVV. Both students and faculty members perceived OSVV as a fairer and more structured approach. While some participants considered it stressful and time-consuming, these concerns can be mitigated through ongoing training and orientation for both students and faculty.

Keywords: Assessment tool, Traditional Viva Voce (TVV), Objectively Structured Viva Voce (OSVV)

دراسة مقارنة بين المناظرة الشفوية التقليدية والموضوعية لطلاب السنة الثانية بكلية الطب

خلفية: تعرّض أسلوب المناقشة الشفوية التقليدية (TVV) لانتقادات بسبب ذاتيته وقابليته للتحيزات الأكاديمية وغير الأكاديمية المتعلقة بكل من المعلمين والطلاب. ولمعالجة هذه المخاوف، اقتُرح أسلوب المناقشة الشفوية (OSVV) المُهيكل موضوعيًا. قارنت هذه الدراسة فعالية أسلوب المناقشة الشفوية التقليدية (OSVV) مع أسلوب المناقشة الشفوية التقليدية (TVV)، واستكشفت آراء طلاب السنة الثانية في بكالوريوس الطب والجراحة وأعضاء هيئة التدريس تجاه أسلوب المناقشة الشفوية التقليدية (OSVV).

الطريقة: أُجريت دراسة مقارنة مقطعية على ١٠٢ طالب وطالبة في السنة الثانية بكلية الطب. خضع كل طالب لتقييمَي التقييم السمعي البصري (TVV) والتقييم السمعي البصري (OSVV). وحُسب متوسط الدرجات المُحصّلة من خلال كلا المنهجين. ووُزّع استبيان قائم على مقياس ليكرت على الطلاب وأعضاء هيئة التدريس لتقييم آرائهم حول التقييم السمعي البصري (OSVV). وحُللت النتائج باستخدام النسب المئوية والتكرارات.

النتائج: كان متوسط الدرجات المُحققة في OSVV (١٢٫٨٠±١٫٧٣) أعلى بكثير من متوسط الدرجات في TVV (١١٫٣٠±١٫٨٠). وافق ٧٦٫٤% من الطلاب بشدة على أن OSVV أكثر عدالة من TVV. كما وافق جميع أعضاء هيئة التدريس (١٠٠%) بشدة على أن OSVV طريقة أكثر تنظيمًا، تغطي المنهج الدراسي بشكل شامل عبر مختلف مستويات الصعوبة.

الخلاصة: وُجد أن التقييم الشفهي (OSVV) أكثر فعاليةً وإنصافًا مقارنةً بالتقييم الشفهي (TVV). وقد رأى كلٌّ من الطلاب وأعضاء هيئة التدريس أن التقييم الشفهي (OSVV) نهجٌ أكثر عدلًا وتنظيمًا. وبينما اعتبره بعض المشاركين مُرهِقًا ويستغرق وقتًا طويلًا، يُمكن التخفيف من هذه المخاوف من خلال التدريب والتوجيه المستمرين للطلاب وأعضاء هيئة التدريس.

الكلمات المفتاحية: أداة التقييم، المقابلة الشفوية التقليدية (TVV)، المقابلة الشفوية المنظمة موضوعيًا (OSVV)

مطالعه تطبیقی روش مصاحبه شفاهی با ساختار عینی و روش مصاحبه سنتی برای دانشجویان سال دوم رشته پزشکی عمومی (MBBS)

زمینه و هدف: مصاحبه شفاهی سنتی (TVV) به دلیل سوگیری‌های آکادمیک و غیر آکادمیک مرتبط با اساتید و دانشجویان مورد انتقاد قرار گرفته است. برای رفع این نگرانی‌ها، فرمت مصاحبه شفاهی با ساختار عینی (OSVV) پیشنهاد شده است. این مطالعه اثربخشی این دو روش را با هم مقایسه کرده و برداشت دانشجویان سال دوم رشته پزشکی و اعضای هیئت علمی را نسبت به مصاحبه شفاهی با ساختار عینی بررسی کرده است.

روش: یک مطالعه مقایسه‌ای مقطعی با ۱۰۲ دانشجوی سال دوم پزشکی عمومی (MBBS) انجام شد. هر دانشجو به وسیله هر دو روش مورد ارزیابی قرار گرفت. میانگین نمرات به‌دست‌آمده از هر دو روش محاسبه شد. یک پرسشنامه مبتنی بر مقیاس لیکرت برای ارزیابی برداشت دانشجویان و اعضای هیئت علمی از مصاحبه شفاهی با ساختار عینی به آنها داده شد. نتایج با استفاده از درصد و فراوانی تجزیه و تحلیل شدند.

یافته‌ها: میانگین نمره کسب شده در مصاحبه شفاهی با ساختار عینی (۱۲/۱±۸۰/۷۳) به طور قابل توجهی بالاتر از روش سنتی (۱۱/۳۰±۱/۸۰) بود. در مجموع ۷۶/۴٪ از دانشجویان کاملاً موافق بودند که روش عینی منصفانه‌تر از روش سنتی است. همه اعضای هیئت علمی (۱۰۰٪) کاملاً موافق بودند که روش عینی روشی ساختاریافته‌تر است و به طور جامع سرفصل‌ها را در سطوح مختلف دشواری پوشش می‌دهد.

نتیجه‌گیری: مصاحبه عینی در مقایسه با مصاحبه سنتی، روش ارزیابی حضوری مؤثرتر و عادلانه‌تری است. هم دانشجویان و هم اعضای هیئت علمی، روش عینی را رویکردی منصفانه‌تر و ساختاریافته‌تر می‌دانستند. در حالی که برخی از شرکت‌کنندگان آن را استرس‌زا و وقت‌گیر می‌دانستند. این نگرانی‌ها را می‌توان از طریق آموزش مداوم و توجیهی برای دانشجویان و اساتید کاهش داد.

واژه‌های کلیدی: ابزار ارزیابی، مصاحبه شفاهی سنتی (TVV)، مصاحبه شفاهی با ساختار عینی (OSVV)

دوسرے سال کے MBBS طلباء کے لیے معروضی طور پر ساختہ اور روایتی viva Voce کا تقابلی مطالعہ

پس منظر: روایتی viva Voce (TVV) کو اس کی سبجیکٹیوٹی اور اساتذہ اور طلباء دونوں سے متعلق تعلیمی اور غیر تعلیمی تعصبات کے لیے حساسیت کے لیے تنقید کا نشانہ بنایا گیا ہے۔ ان خدشات کو دور کرنے کے لیے معروضی طور پر تشکیل شدہ viva Voce (OSVV) فارمیٹ تجویز کیا گیا ہے۔ اس مطالعہ نے OSVV کی تاثیر کا TVV کے ساتھ موازنہ کیا اور OSVV کے تئیں دوسرے سال کے MBBS طلباء اور فیکلٹی ممبران کے تاثرات کو دریافت کیا۔

طریقہ: ایم بی بی ایس کے دوسرے سال کے ۱۰۲ طلباء کے ساتھ ایک کراس سیکشنل تقابلی مطالعہ کیا گیا۔ ہر طالب علم نے TVV اور OSVV دونوں تشخیصات سے گزرا۔ دونوں طریقوں سے حاصل کردہ اوسط اسکور کا حساب لگایا گیا۔ OSVV کے بارے میں ان کے تاثرات کا جائزہ لینے کے لیے طلباء اور فیکلٹی ممبران کو ایک لیکرٹ پیمانے پر مبنی سوالنامہ دیا گیا۔ نتائج کا تجزیہ فیصد اور تعدد کا استعمال کرتے ہوئے کیا گیا۔

نتائج: OSVV (۱۲٫۸۰±۱٫۷۳) میں حاصل کردہ اوسط سکور TVV (۱۱٫۳۰±۱٫۸۰) کے مقابلے میں نمایاں طور پر زیادہ تھا۔ مجموعی طور پر ۷۶٫۴% طلباء نے اس بات پر سختی سے اتفاق کیا کہ OSVV TVV سے بہتر ہے۔ تمام فیکلٹی ممبران (۱۰۰%) نے اس بات پر سختی سے اتفاق کیا کہ OSVV ایک زیادہ منظم طریقہ ہے، جس میں مشکل کی مختلف سطحوں پر جامع طور پر نصاب کا احاطہ کیا گیا ہے۔

نتیجہ: OSVV کو TVV کے مقابلے ویوا تشخیص کا زیادہ موثر اور مساوی طریقہ پایا گیا۔ طلباء اور فیکلٹی ممبران دونوں نے OSVV کو بہتر اور زیادہ منظم انداز کے طور پر سمجھا۔ اگرچہ کچھ شرکاء نے اسے دباؤ اور وقت طلب سمجھا، ان خدشات کو طلباء اور فیکلٹی دونوں کے لیے جاری تربیت اور واقفیت کے ذریعے کم کیا جا سکتا ہے۔

مطلوبہ الفاظ: تشخیص کا آلہ، روایتی Viva Voce (TVV)، معروضی طور پر ساختہ Viva Voce (OSVV)

INTRODUCTION

Since the 1950s, written and oral examinations have been used to assess the knowledge and competencies of medical students (1). The conventional oral examination (COE), also referred to as the unstructured or traditional viva voce (TVV), involves an interview or discussion between examiners and the student (2). The TVV primarily emphasises professional aspects of medical subjects, including practice-oriented knowledge, mental acuity, effective verbal communication, and sound decision-making skills (3, 4). The TVV remains a valuable assessment format, particularly effective in evaluating borderline or exceptional students (5). It currently forms an integral part of both formative and summative examinations across various undergraduate medical universities in India. However, the TVV has been criticised for its subjectivity and for being influenced by both academic and non-academic factors related to examiners and students. Limitations of the TVV include concerns regarding its validity, objectivity, comprehensiveness, inter-evaluator variability, repeatability, and the potential for gender bias (6).

To address these issues, the objectively structured viva voce (OSVV) format has been proposed. With the implementation of a revised medical curriculum, there is a growing need to shift from traditional pen-and-paper knowledge tests to more comprehensive assessment systems. These new tools are designed not only to evaluate knowledge but also to assess psychomotor and communication skills (7). The OSVV format ensures a fair and standardised evaluation process, offering each candidate an equal opportunity to demonstrate their knowledge, clinical skills, and professional attitude (8).

At our institute, the traditional practical examination pattern is currently in use. However, there is a recognised need to improve assessment methods to ensure greater fairness and standardisation. Therefore, this study compared the effectiveness of the OSVV with the TVV among second-year MBBS students. In addition, the study evaluated the perceptions of participating students and faculty regarding the feasibility, acceptability, and effectiveness of the OSVV format.

METHODS

Study design: This quasi-experimental interventional study, employing a crossover comparative design, was conducted in the Department of Microbiology at Mayo Institute of Medical Sciences, Barabanki, Uttar Pradesh, over a period of three months.

Study participants: All second-year MBBS students enrolled at the institution participated in the study.

Study protocol: The study commenced following approval from the Institutional Human Research Ethics Committee (Approval No. MIMS/EX/2021/251, dated 30/10/2021).

- *Participant allocation and comparability*: Students and faculty members from the Department of Microbiology were sensitised to the OSVV format through a PowerPoint presentation, followed by a mock OSVV session conducted prior to the actual examination. A total of 102 students enrolled in the study were divided into two groups (Group A and Group B), each comprising 51 students, for evaluation via both the TVV and OSVV. To ensure comparability between the groups, participants were initially stratified according to their prior academic performance based on percentile scores. Three strata were created, namely top 33%, middle 33%, and bottom 33%, each consisting of 17 students. Students were then randomly selected from each stratum to form Group A and Group B, thereby maintaining a balanced distribution of academic performance across both groups.
- *Study schedule and crossover design details*: Assessments were conducted on two consecutive days, with the order of evaluation reversed between groups to minimise learning or fatigue effects commonly associated with crossover study designs. Group A was assessed first using the TVV, followed by the OSVV, whereas Group B underwent OSVV first, followed by TVV. Although a formal washout period could not be incorporated due to academic scheduling constraints, the reversal of the assessment sequence was intended to counterbalance potential carryover effects.
- *Assessment content:* Two prevalidated sets of questionnaires were used—one for each assessment method (TVV and OSVV). These were designed to be equivalent in terms of difficulty and content coverage, including must-know, desirable-to-know, and good-to-know areas. This approach minimised bias arising from repeated exposure or learning effects.
- *Assessment of students*: The assessments were conducted over two consecutive days, with Group A evaluated on the first day and Group B on the second. Students in Group A were first assessed through TVV followed by OSVV, whereas those in Group B underwent OSVV first, followed by TVV. The marks obtained during this exercise were not included in the students' regular academic assessments.
- *Implementation of TVV*: In the TVV, students were individually assessed by a panel of examiners based on the following key features:
  - Format: Students participated in face-to-face oral assessments, responding to questions posed by the examiners.
  - Questioning: Questions were open-ended, varied in difficulty, and covered a broad range of curriculum topics, focusing on key medical concepts, clinical cases, and theoretical knowledge. The selection of questions was at the discretion of the examiners, with no predetermined structure.
  - Interaction: Examiners could pose follow-up questions based on students' responses, allowing for further exploration of their strengths or weaknesses. Evaluation was based on a subjective assessment of

understanding, critical thinking, and clarity of articulation.

○ Assessment: Scoring was based on the examiner's judgement of the student's overall performance, including accuracy, reasoning ability, and communication skills. The absence of a structured marking rubric contributed to the subjectivity of the evaluation. The maximum score allocated to the TVV was 20 marks.

○ Duration: Each viva session typically lasted between 8 and 10 minutes.

• *Implementation of OSVV* – The OSVV was designed to assess students in a more structured and standardised manner, ensuring uniformity in the evaluation process. The following protocol was followed:

○ Format: The OSVV comprised multiple assessment stations, each aimed at evaluating specific clinical competencies. Students rotated through these stations, spending a predetermined amount of time at each one.

○ Questioning: A pre-validated set of two questionnaires for each group, matched in difficulty and covering the must-know, desirable-to-know, and good-to-know areas, was prepared.

○ Assessment Criteria: A detailed rubric was used to assess student performance at each station. The rubric included specific criteria such as accuracy of responses, clinical reasoning, communication skills, and professionalism. Each criterion was scored using a 5-point Likert scale, ensuring a more standardised and objective evaluation.

○ Scoring and Feedback: Upon completion of the OSVV, students received scores based on their performance at each station. Examiners provided constructive feedback, highlighting strengths and areas for improvement to support further learning.

○ Duration: Each OSVV station typically lasted between 3 and 5 minutes, with students assessed at multiple stations during a single session.

Distribution of marks for OSVV was as follows:

Distribution of marks	No. of questions	Marks for each question	Total marks
Must know area questions	5	3	15
Desirable to know area questions	2	2	4
Good to know area	1	1	1
Total Marks			20

• **Controlling for bias and order effects:** To minimise potential bias from order effects, the two assessment methods were administered in reversed order across the groups. Faculty examiners were blinded to the sequence in which students underwent the assessments. During data analysis, paired comparisons and subgroup analyses were employed to identify and adjust for any order or learning effects.

Data collection and statistical analysis: The assessment scores of students for both TVV and OSVV were collected and analysed statistically by using a paired t-test, taking into account the crossover design, in which each student served as their own control. This approach was employed to determine the more effective assessment tool between OSVV and TVV while minimising the influence of individual variability. A questionnaire to evaluate the perceptions of students and faculty members was also developed, using a 5-point Likert scale. The responses were analysed using the chi-square test to assess the statistical significance of the observed frequency distributions in agreement levels.

RESULTS

A total of 102 students participated in the study, divided into two groups (n = 51 each), with a 100% response rate. Among them, 44 (43.1%) were female and 58 (56.9%) were male.

Intra-group comparisons using a paired t-test revealed that students in both groups scored significantly higher in OSVV than in TVV. Group A demonstrated higher mean scores in OSVV compared with TVV, and a similar trend was observed in Group B. These differences were statistically significant in both cases ($p < 0.001$), as shown in Table 1.

Student perceptions, based on questionnaire responses, indicated that the majority regarded OSVV as fairer, more comprehensive, and less stressful. Over 65% of students preferred OSVV over TVV and expressed satisfaction with the level of difficulty and time allocation. All student responses were statistically significant ($p < 0.0001$). The detailed distribution is provided in Table 2 and illustrated in Figure 1. Faculty perceptions of OSVV were also analysed (Table 3). All faculty members strongly agreed that OSVV was a structured and well-organised assessment system, covering topics across varying levels of difficulty. They also considered OSVV to be a superior method compared with TVV. However, some concerns were

Table 1. Comparison of marks obtained by students in both groups in two types of Viva Voce

Group	TVV (N=102) Mean (SD)	OSVV (N=102) Mean (SD)	P-value
Group A	11.30 (1.80)	12.80 (1.73)	0.0000000858
Group B	10.90 (1.50)	12.50 (1.42)	0.00000000015

expressed regarding the adequacy of time allotted per question (Figure 2).

DISCUSSION

The present study evaluated the effectiveness and acceptability of OSVV compared with TVV among second-year MBBS students. The key findings indicated that students performed significantly better in OSVV, with statistically higher average scores observed in both crossover groups. Feedback from both students and faculty further revealed a strong preference for OSVV, citing its impartiality, comprehensive content coverage, and reduced subjectivity.

In medical education, assessments are conducted at regular intervals to evaluate students' knowledge and determine their readiness for progression. Considerable efforts have been made to enhance the

Table 2. Student's feedback regarding OSVV (n=102)

Questions	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	P-value
It was fair	76.47%	15.68%	7.84%	0%	0%	<0.00001
Had covered a wide range of critical areas	65.68%	23.52%	10.78%	0%	0%	<0.00001
Satisfied with the difficulty level of the questions	58.82%	27.45%	12.74%	0%	0.98%	<0.00001
Provision of appropriate time to answer each question	63.72%	23.52%	11.76%	0%	0.98%	<0.00001
Had logical sequencing in questioning	52.94%	32.35%	13.72%	0%	0.98%	<0.00001
Was an effective and valid tool to assess knowledge	53.92%	32.35%	13.72%	0%	0%	<0.00001
The process was stressful	1.96%	2.94%	22.54%	31.37%	41.17%	<0.00001
Highlighted my weakness in the subject	69.60%	23.52%	5.88%	0.98%	0%	<0.00001
Highlighted my strength in the subject	77.45%	17.64%	4.90%	0%	0%	<0.00001
OSVV is better than TVV	65.68%	18.62%	15.68%	0%	0%	<0.00001

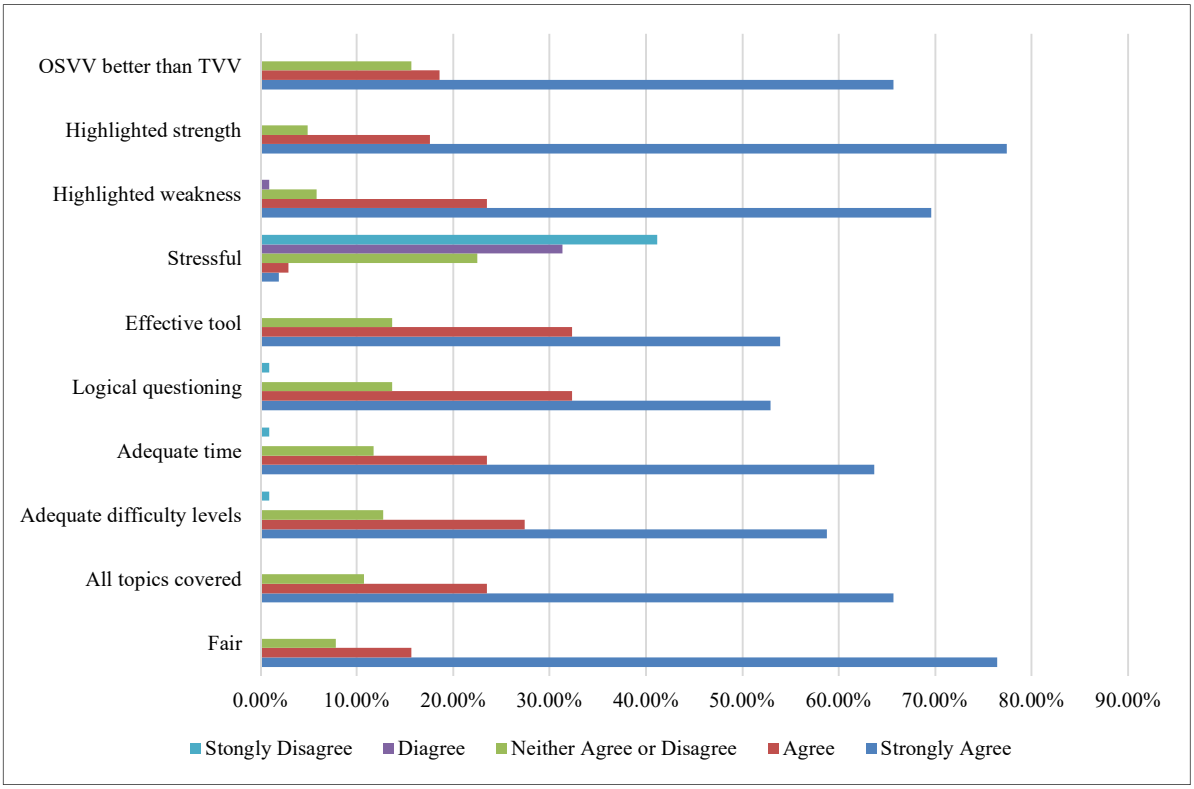

Figure 1. Student's feedback regarding OSVV

Table 3. Faculties feedback regarding OSVV(n=9)

Questions	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
This was a well-organized system	100%	0%	0%	0%	0%
Cover most topics from the syllabus	100%	0%	0%	0%	0%
Questions were from all difficulty levels	100%	0%	0%	0%	0%
The time allotted was adequate	33.33%	66.66%	0%	0%	0%
Questions were easy to understand	100%	0%	0%	0%	0%
This will be helpful in enhancing performance in examination	100%	0%	0%	0%	0%
OSVV is better than TVV	100%	0%	0%	0%	0%
OSVV is an effective tool	100%	0%	0%	0%	0%

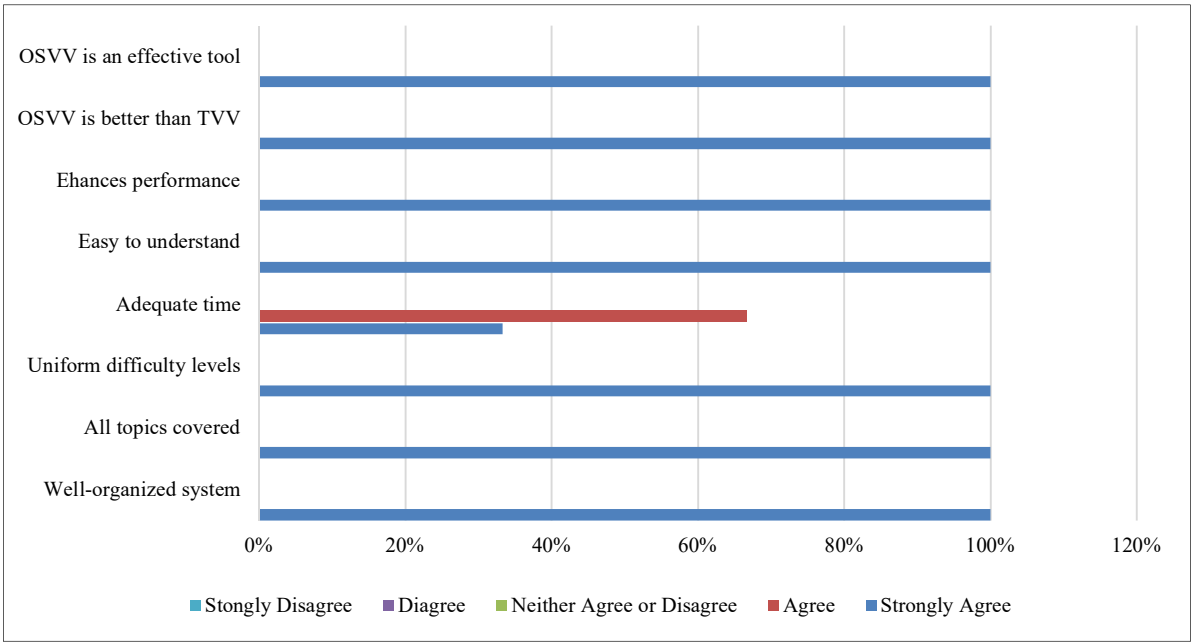

Figure 2. Faculties feedback regarding OSVV

reliability and objectivity of such evaluations (9). To address the limitations of traditional viva examinations, educators have proposed and implemented innovative assessment methods (10).

Accordingly, the present study introduced OSVV as a formative assessment tool in microbiology for second-year MBBS students and to explore its feasibility, ease of implementation, and the perceptions of both students and faculty members.

Viva voce remains an important method of assessment in medical education. Most medical colleges in India still follow the traditional format, wherein students are asked random questions to assess their subject knowledge. Harden *et al.* (1975) were the first to describe the OSCE as a means of assessing the clinical skills of final-year medical students (11). There is a pressing need to enhance the validity and reliability of practical examinations, which can be achieved by reducing subjectivity and introducing more objective formats.

Developing the OSVV protocol, along with corresponding questions and answers, proved to be the most challenging and time-consuming aspect of the implementation. Several mock OSVV sessions were conducted by faculty members to familiarise themselves with the process and to reduce student apprehension and time constraints.

In the present study, students in both groups scored higher in OSVV (mean score: 12.65) than in TVV (mean score: 11.1), a difference that was statistically significant ($p < 0.0001$). Similar findings were reported by Imran *et al.*, who found OSVV to be more discriminatory than TVV and better suited to providing a reliable, standardised, and unbiased

assessment. They also emphasised that structured theory, practical, and viva voce examinations contribute to a more meaningful evaluation (12). Rajani and Ghewade likewise reported a mean score difference of 5.11 between OSVV and TVV, with students scoring 23.36 ± 6.79 in OSVV compared with 18.26 ± 4.33 in TVV (13).

The reported advantages of OSVV in terms of assessment objectivity and uniformity align with Miller's Pyramid, which posits that this method more accurately assesses students' ability to apply and demonstrate knowledge ("shows how") in addition to what they know ("knows") (14). OSVV also reflects the principles of Constructivist Learning Theory, which emphasises structured, experience-based learning and fair evaluation practices (15). This transition to structured assessment is consistent with Outcome-Based Education (OBE), which prioritises the measurement of specific competencies over rote memorisation (16).

In their study on OSVV, Puppalwar *et al.* found the format to be reliable and recommended that further large-scale studies be conducted to enhance its validity (7). Similarly, in their review article, Rahman and Rahman advocated for the implementation of the Structured Oral Examination system, highlighting its potential to improve the evaluation of medical students and support the advancement of medical education (17).

Although the preparation required for OSVV was considerable, the benefits are expected to become evident as the format is incorporated into both formative and summative assessments within our institute.

The perspectives of both students and faculty were highly encouraging with regard to OSVV, as both groups considered it a more reliable and valid method for practical examination. The primary concern expressed by students and faculty was related to time allotment, and 15% of students were uncertain about whether OSVV was superior to the traditional viva voce. A small proportion of students (14%) were dissatisfied with the logical sequencing of questions, and 13% expressed concerns about the level of difficulty. These issues can be addressed through regular faculty training, mock examinations, and orientation sessions for students. Similar findings were reported by Dangre-Mudey *et al.* and Rajani M *et al.*, who also concluded that OSVV is a more reliable assessment method than TVV. However, they emphasised the need for further preparation prior to implementation, including comprehensive faculty development, structured student orientation, and adequate preparation for students to undertake this format of examination (13,18).

Both students and faculty agreed that OSVV is a better approach than TVV, as it minimises inter-examiner variability and bias. Furthermore, using a uniform set of questions ensured consistency and fairness in the level of difficulty across all candidates.

LIMITATIONS

This study has a few limitations. Although a crossover comparative design was employed, the primary objective was to compare assessment methods rather than to estimate treatment effects over time. Consequently, no formal statistical models (e.g., mixed-effects models or two-way ANOVA) were applied to account for period or carryover effects, primarily due to academic constraints. Additionally, the study was conducted at a single institution with a relatively modest sample size, and the feedback obtained relied on self-reported perceptions, which may be subject to bias. These limitations are acknowledged, and future studies incorporating larger, multi-centre samples and more robust statistical analyses are recommended to build upon the present findings.

CONCLUSION

The present study suggests that traditional viva voce lacks reliability, validity, and objectivity; therefore, OSVV may serve as a superior assessment tool compared with TVV, offering greater validity and benefiting both students and faculty.

Ethical Considerations: Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. This study was approved by the Institutional Human Research Ethics Committee (Approval No. MIMS/EX/2021/251, dated 30/10/2021).

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