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Research Article

From Viva Voce to Checklists: Improving Assessment and Academic Performance in Community Medicine Clinical Postings

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A B S T R A C T

Background: Objective Structured Practical Examination (OSPE) using checklist-based assessment has emerged as an effective tool for evaluating practical skills in medical education. However, evidence on its impact on academic performance in community medicine clinical postings remains limited.

Objective: To assess medical students' experiences and perceptions of clinical posting in community medicine and compare academic performance between two consecutive batches following implementation of checklist-based skill assessment with enhanced formative evaluation.

Methods: This record-based comparative study analyzed data from two MBBS batches (2021: n=95; 2022: n=111) at a state-run medical college in Delhi. The 2021 batch underwent conventional assessment (case presentations, viva voce, health education, logbook, seminars, spotters, and epidemiological exercises). The 2022 batch received enhanced assessment, including checklist-based skill assessment, case vignettes, and multiple presentation opportunities. Student feedback was collected using Likert scales and open-ended questions. Formative and summative assessment scores were compared using paired and independent t-tests.

Results: Checklist-based assessment showed high acceptability (82.9% found it easy to perform). Both batches achieved similar formative scores (2021: 69.65±8.57 vs 2022: 69.50±7.34, p=0.89). However, summative performance diverged significantly: the 2021 batch declined 8.77 percentage points (p<0.001), while the 2022 batch maintained consistency (p=0.74) and scored 7.87 percentage points higher than the 2021 batch. Qualitative feedback revealed appreciation for the performance-oriented nature, transparency, and reduced anxiety associated with checklist-based assessment.

Conclusion: Checklist-based skill assessment integrated with enhanced formative evaluation demonstrated high student acceptability and was correlated with improved academic performance, suggesting

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that structured, transparent assessment promotes deeper learning and better examination preparedness.

Keywords: OSPE, checklist-based assessment, formative assessment, Community Medicine, clinical postings, medical education

Introduction

Community medicine clinical postings form an integral component of undergraduate medical education in India, providing students with hands-on experience in applying theoretical knowledge to real-world public health scenarios. The clinical posting program in community medicine has traditionally focused on exposing students to various aspects of community health, preventive medicine, and population-based healthcare delivery. Students are posted to field practice areas, urban and rural health centers, and community settings where they interact with patients, families, and communities to understand health problems from a broader socio-environmental perspective.

Objective Structured Practical Examination (OSPE) has emerged as an effective assessment tool in medical education, particularly for evaluating practical skills through standardized checklists. Recent studies demonstrate OSPE's utility in eliminating observer bias while providing objective, fair, and comprehensive assessment of clinical competencies across multiple skill domains. OSPE enables systematic evaluation of psychomotor skills at observer stations and cognitive skills at responsive stations using checklists, making it superior to conventional practical examinations.[1,2]

The competency-based medical education with its amendments has introduced several new competencies, teaching techniques, and assessment techniques to evaluate the competencies. It is a shift from theoretical knowledge to a deeper understanding and practical application of the subject by the students. This can be monitored and ensured by the multiple opportunities provided for assessment with special emphasis on certifiable skills. Introducing newer teaching tools and assessment tools breaks the monotony among students.[3]

By integrating OSPE-style checklist-based assessments with structured reflection exercises, medical educators can enhance both formative assessment and student learning.[4] This study examines student performance and perceptions in the form of reflections following the implementation of checklist-based skill assessment in community medicine clinical postings.

Objective

To assess medical students' experiences and perceptions of clinical posting in community medicine, focusing on skill development in communication, practical application of theoretical knowledge, epidemiological and biostatistical exercises, and health education activities, and to compare the marks between two consecutive batches (2021 and 2022) following implementation of a comprehensive end-posting assessment scheme.

Material And Methods

This is a record-based secondary data analysis of two MBBS batches for the Community Medicine practical/ clinical posting at a state-run medical college in Delhi. There are 125 undergraduate admissions per year. Admission year 2021 and 2022 batch students were included in the analysis. Students are posted in the Community Medicine department for clinical postings two times, which are the second and third phases. However, students who were eligible for the university exam and completely filled the voluntary feedback and reflections were included in the analysis. The summative university exams are conducted at the end of the third phase. The analysis of records was conducted after the MBBS batch 2022's university exam results were announced, i.e., January-February 2026.

In the conventional approach followed for the 2021 batch, clinical postings were structured around several core activities designed to build competencies in community medicine practice. Students participated in a family study in the community to understand the demographic patterns, environmental health conditions, and nutritional status of community members. They were trained to conduct health assessments, identify health problems, and recognize social determinants of health. Students also gained experience in calculating biostatistical measures and epidemiological exercises. Health education formed another crucial component, wherein students were expected to deliver health talks or role play or puppet shows or create educational materials in the form of posters, pamphlets, and cartoon strips for community health promotion. Spotters' identification exercises were conducted within one-minute timeframes, testing students' ability to quickly recognize and interpret community health indicators, instruments, and scenarios they might encounter in field settings. Formal seminars on relevant

community medicine topics, enhancing their skills in literature review, critical analysis, and academic presentation. The assessment at the end of posting typically involved: (Fig 1)

- case presentations where students demonstrated their understanding of community health issues, along with
- viva voce examinations covering topics related to their field experiences,
- health education sessions assessment,
- logbook evaluation,

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- seminars and
- spotters identification in one minute time,
- Epidemiological and Biostatistical exercise

Recognizing the need for more structured skill development and comprehensive assessment of competencies, an enhanced clinical posting scheme was introduced for the 2022 batch. This newer approach retained the fundamental components of Community Medicine training while incorporating additional teaching methods and more rigorous assessment strategies to improve learning outcomes. The revised scheme maintained all the essential field activities including surveys, epidemiological exercises, and community interactions, but supplemented them with more systematic skill-building exercises and diverse assessment modalities. Case presentations assessment was expanded to include both during-posting and end-posting presentations, allowing for continuous evaluation of student progress and providing opportunities for formative feedback. Short case vignettes were introduced as an innovative teaching and assessment tool, presenting students with realistic community health scenarios that required them to apply their knowledge, analyze situations, and propose appropriate public health interventions. These case vignettes served dual purposes: during the posting, they were used as teaching aids to stimulate discussion, encourage critical thinking, and help students connect theoretical concepts with practical situations; for assessment, they provided a standardized method to evaluate students' problem-solving abilities, clinical reasoning, and application of community medicine principles in context-specific scenarios. An innovation in the 2022 scheme was the introduction of checklist-based assessment of skills (for e.g., vaccination technique, counselling a pregnant female regarding mother child protection card, etc.), providing a more objective and comprehensive evaluation framework that clearly defined expected competencies and allowed students to understand their performance across multiple skill domains. We used the term checklist-based assessment of skills as a proxy to OSPE. Hence the assessment included (Fig 1)

- case presentations during the class
- case presentation at the end of posting
- viva voce examinations covering topics related to their field experiences
- health education sessions assessment,
- checklist based skill assessment,
- seminars and
- spotters identification in one minute time
- Epidemiological and Biostatistical exercise

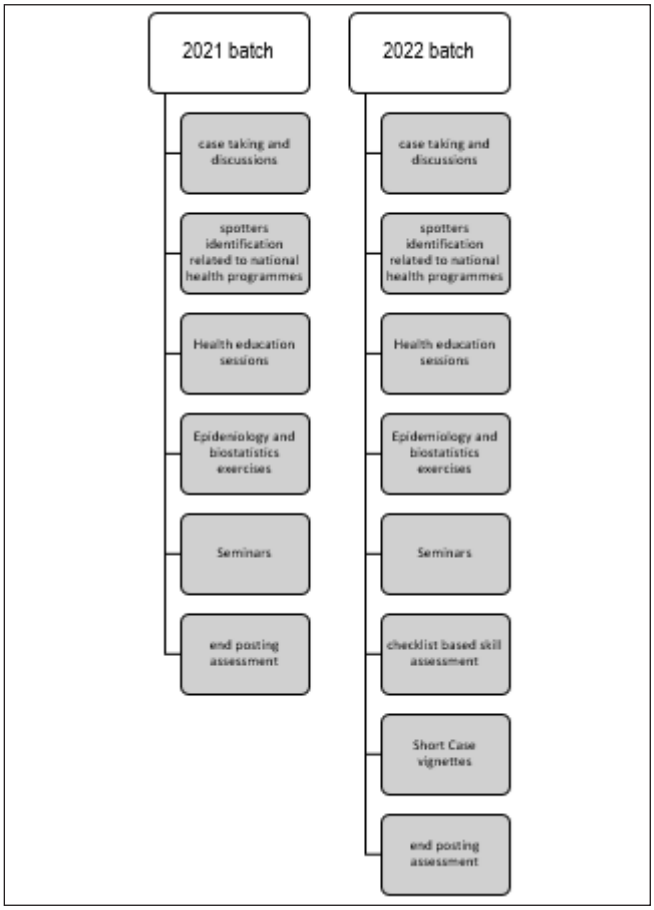

Figure 1.Framework of clinical posting in Community Medicine

Following the completion of clinical postings for both batches, structured feedback and reflections were collected from students as a routine activity to evaluate their experiences and perceptions of the training program. It was conducted at the end of clinical posting for both the 2021 and 2022 batches using a standardized questionnaire designed to capture student experiences across multiple domains of clinical posting. For the 2022 batch specifically, an additional question was included to assess their experience with the newly introduced checklist-based assessment, asking whether they found it difficult, neutral, or easy to perform. The feedback forms were distributed to all students who completed the posting, and responses were collected anonymously to encourage honest and candid feedback. The feedback data was majorly on a Likert scale of 1 to 5, with one being a very poor experience or very difficult to understand and five meaning an excellent experience or understanding completely. It was compiled and analyzed to generate frequency distributions and

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percentages for each response category, allowing for identification of trends, areas of strength, and opportunities for further improvement in the clinical posting program. For the purpose of analysis, the Likert responses of 1 and 2 were clubbed in one category of difficult to very difficult, and 3 was in the neutral category; 4 and 5 were put into one category of good to excellent. An open-ended question on what they liked or disliked was analyzed qualitatively, presenting them as themes.

Ethics Approval

A waiver from ethical approval was obtained from the institute's ethical committee. While obtaining the feedback, a consent was obtained via Google Forms from students stating that feedback data will be kept anonymous and can be used for future academic or research purposes.

Statistical Analysis

The data was presented as the percentage marks of formative assessment (end posting assessment) and summative assessment (university examination) and were also compared to triangulate the findings. A paired t-test and an independent t-test were used to test the difference in means between two exams and between two batches, respectively. A p-value less than 0.05 was considered statistically significant.

Results

A total of 95 students from the 2021 batch and 111 students from the 2022 batch participated in the feedback exercise, providing a comprehensive dataset for comparative analysis. Feedback was collected from 206 medical students across two consecutive batches (2021 batch: n=95; 2022 batch: n=111) following completion of their clinical posting in Community Medicine.

The majority of students reported positive experiences with the clinical posting. Among the 2021 batch, 44.2% rated their experience as excellent and 44.2% as good. The 2022 batch showed improvement, with 51.4% rating their experience as excellent and 45.9% as good. (Fig. 2)

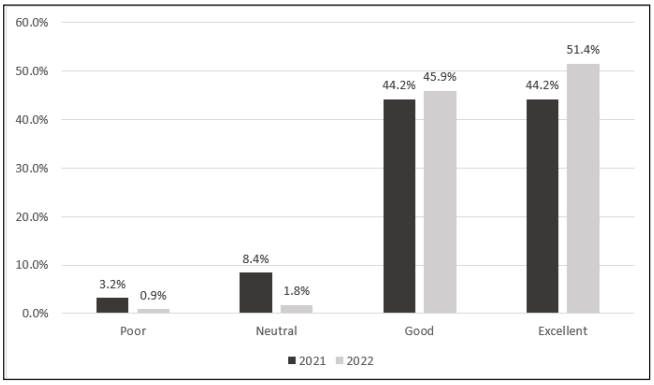

Figure 2.Overall experience of clinical posting in Community Medicine

Students reported substantial gains in communication skills during the posting. In the 2021 batch, 83.2% reported a good experience in developing communication skills, while 5.3% found communication difficult. The 2022 batch showed similar results with 86.5% reporting good communication skill development. Among 2021 batch students, 78.9% achieved the best understanding of practical applications, and the 2022 batch performed slightly better, with 83.8% reporting the best understanding of applications. In the 2021 batch, 57.9% rated their learning experience as good to excellent, 33.7% as neutral, and 8.4% as difficult. The 2022 batch showed enhanced performance, with 72.1% rating it as very good, 20.7% as neutral, and 7.2% as difficult. In the 2021 batch, 86.3% reported that these activities improved their skills, while 6.3% found them difficult to conduct. The 2022 batch showed similar results with 86.5% reporting skill improvement. (Table 1)A checklist-based assessment of skills was introduced for the 2022 batch (n=111). The majority of students (82.9%) found the checklist easy to perform, while 11.7% remained neutral and 5.4% found it difficult. (Table 2) While both batches demonstrated similar formative assessment scores (2021: 69.65±8.57 vs 2022: 69.50±7.34, p=0.89), their summative assessment performance differed significantly. The 2021 batch showed a substantial decline from formative to summative assessments (69.65±8.57 to 61.88±6.76, p<0.001), whereas the 2022 batch maintained consistent performance across both assessments (69.50±7.34 to 69.75±6.96, p=0.74). There was significant improvement in 2022 summative scores (7.87 percentage points). (Table 3) Qualitative analysis of student feedback revealed several important themes regarding their clinical posting experiences (Fig 3). Students consistently reported that communication skills developed significantly through case taking exercises, which provided them with repeated opportunities to interact with patients and families in community settings. Conducting health education activities emerged as a confidence-building experience, with students expressing that the practical application of delivering health talks, creating educational materials, and engaging in interactive methods enhanced their self-assurance in public health communication. The 2022 batch specifically appreciated the structured approach of the end posting examination, noting that the clear framework and diverse assessment methods provided better preparation and reduced ambiguity about expectations. However, certain components generated anxiety among students, with spotters' identification exercises, seminar presentations, and logbook completion being the most feared activities (in both the batches), likely due to the time-bound nature of spotters, the public speaking demands of seminars, and the comprehensive documentation requirements of logbooks. Notably, the checklist-based skill assessment

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introduced for the 2022 batch received positive feedback, with students appreciating its performance-oriented nature that emphasized demonstrating practical competencies rather than verbal articulation, making it feel less intimidating and more objective as an evaluation method.

Table 1.Likert scale based feedback at the end of clinical posting

Batch	Experience of gaining communication skills in posting			Total
	Difficult communicating N (%)	Neutral effect N (%)	Good experience in communication skills N (%)	N (%)
2021	5 (5.3)	11 (11.6)	79 (83.2)	95 (100)
2022	1 (0.9)	14 (12.6)	96 (86.5)	111 (100)
Total	6 (2.9)	25 (12.1)	175 (85.0)	206 (100)
	Practical application of knowledge of demography, environment and nutrition learnt in theory			Total
	Cannot apply	Neutral	Best understanding of application	
2021	3 (3.2)	17 (17.9)	75 (78.9)	95 (100)
2022	2 (1.8)	16 (14.4)	93 (83.8)	111 (100)
Total	5 (2.4)	33 (16.0)	168 (81.6)	206 (100)
	Experience in learning epidemiology and biostatistics exercise			Total
	Difficult	Neutral	Good to excellent	
2021	8 (8.4)	32 (33.7)	55 (57.9)	95 (100)
2022	8 (7.2)	23 (20.7)	80 (72.1)	111 (100)
Total	16 (7.8)	55 (26.7)	135 (65.5)	206 (100)
	Experience with health education exercises of conducting health talk, role play, poster making, comic strip etc.			Total
	Difficult to conduct	Neutral	Improved my skills to good extent	
2021	6 (6.3)	7 (7.4)	82 (86.3)	95 (100)
2022	1 (0.9)	14 (12.6)	96 (86.5)	111 (100)
Total	7 (3.4)	21 (10.2)	178 (86.4)	206 (100)

Table 2.Experience of checklist-based assessment of skills for 2022 batch

2022 batch only	N (%)
Difficult	6 (5.4)
Neutral	13 (11.7)
Easy to perform	92 (82.9)
Total	111

Table 3.Mean percentage marks of both batches

Batch	Formative assessment mean percentage marks	Summative assessment mean percentage marks	Paired t test, p value
2021 (95)	69.65±8.57	61.88±6.76	<0.001
2022 (111)	69.50±7.34	69.75±6.96	0.74
Independent t test, P value	0.89	<0.001	

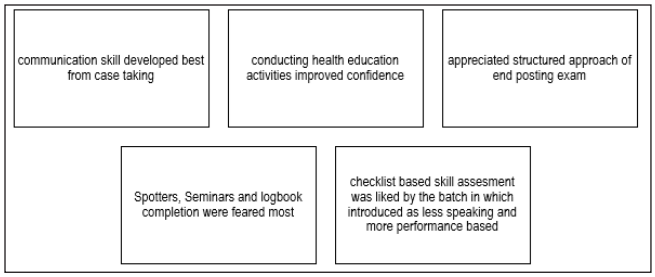

Figure 3.Feedback of students

Discussion

This study demonstrates that implementing OSPE/checklist-based skill assessment with enhanced formative evaluation significantly improves student performance and learning outcomes in community medicine clinical postings.

Implementation and Student Acceptance

The introduction of checklist-based assessment in the 2022 batch showed high acceptability (82.9% found it easy to

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perform), aligning with Sushma et al.[5], who reported that OSPE eliminated observer bias and provided objective assessment across multiple competency domains. This structured approach addresses fundamental limitations of traditional viva voce examinations, including examiner variability and inadequate psychomotor skill assessment, as documented by Misra et al.[6] and Wadde et al.[7]

Students particularly valued the checklist's "performance-oriented nature," which shifted assessment focus from verbal articulation to practical demonstration. This reduced communication barriers inherent in traditional examinations, enabling authentic assessment of clinical competence regardless of verbal proficiency. Qualitative feedback revealed that communication skill development through case-taking and confidence-building through health education activities were transformative learning experiences. The transparency of explicit performance standards reduced anxiety and enabled targeted preparation, though traditional components like spotters' identification and seminar presentations remained anxiety-provoking across both batches.

Impact on Learning Outcomes

The enhanced formative assessment structure yielded measurable impact on learning outcomes. While both batches achieved similar formative scores, their summative performance diverged markedly. The 2021 batch declined significantly, whereas the 2022 batch maintained consistency and achieved 7.87 percentage points higher summative scores than the 2021 batch. This pattern demonstrates that OSPE-integrated formative assessment better prepared students for summative evaluation, supporting the principle that "assessment drives learning." The maintenance of performance from formative to summative assessments suggests more durable learning rather than examination cramming. The checklist-based assessment's emphasis on demonstrable competencies likely encouraged procedural knowledge consolidation, while case vignettes promoted clinical reasoning. Multiple presentation opportunities provided rehearsal and feedback, reducing novelty stress during summative evaluation and fostering deeper learning approaches aligned with Competency-Based Medical Education mandates.

However, the reduction in summative performance of 2021 can be attributed to multiple other factors, for example, the difficulty level of the exam, the variation in examiner stringency between the two years, and inherent differences in student cohort characteristics. Moreover, the 2021 entry batch may have experienced more disruption from pandemic-related challenges.[8,9] Also, the formative assessment is conducted by internal examiners of the institute, and the summative by external and internal both. If the 2021 batch's formative scores were somewhat inflated, the decline could represent natural regression toward their true ability level.

Implementation Challenges

Despite positive outcomes, implementation presents practical challenges. Faculty workload increases substantially with multiple case presentations, individualized feedback, and checklist-based assessments even in small groups of 15-16 students. Gutti et al. reported standardization across assessors requires faculty development and calibration sessions, and time constraints emerged as significant hindrances.[10] Several limitations merit consideration. The observational study design, examining two consecutive non-randomized batches, limits causal inference. The 2021 batch's performance decline could be attributed to factors beyond the assessment intervention, including differences in examination difficulty, examiner stringency, cohort characteristics, or baseline academic ability variables not measured in this study. Temporal factors such as differential COVID-19 pandemic impact, faculty changes, or variations in clinical exposure opportunities may have influenced outcomes. The simultaneous implementation of multiple interventions (checklist-based assessment, case vignettes, multiple presentation opportunities) makes it impossible to isolate the specific contribution of each component. Additionally, the lack of a randomized control group and potential regression to the mean effects limit definitive conclusions about causality.

Conclusion And Recommendations

Checklist-based skill assessment integrated with enhanced formative evaluation demonstrated high student acceptability (82.9%) and improved academic performance in community medicine clinical postings. Despite observational design limitations, the group with modified teaching maintained formative-to-summative consistency, and superior summative scores suggest that structured, transparent assessment promotes deeper learning and better examination preparedness. Future directions include gradual expansion to additional skills, technology integration for digital checklist completion and feedback delivery, incorporation of peer assessment, comprehensive faculty development programs, and longitudinal research examining whether improved summative performance translates to enhanced clinical competence in subsequent training stages and professional practice.

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