

## Introduction and Impact of Mini Clinical Evaluation Exercise as an Assessment Tool for MBBS Interns Posted in the Department of Dermatology

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### Abstract

**Background:** Competency-based medical education (CBME) has highlighted the importance of formative assessment methodologies that evaluate real-time clinical performance. Traditional assessment methods frequently fail to assess critical qualities like communication, professionalism, and clinical reasoning during actual patient encounters. Mini-Clinical Evaluation Exercise (Mini-CEX) is a systematic workplace-based assessment method that aims to close this gap.

**Objectives:** The present study was conducted to introduce Mini-CEX as a formative assessment tool for MBBS interns during their dermatology posting. The study also aimed to assess the impact of Mini-CEX on interns' clinical competencies, including history taking, examination, clinical judgment, communication skills, and professionalism. Additionally, the perceptions of interns and faculty regarding the usefulness and feasibility of Mini-CEX were evaluated.

**Methods:** A prospective interventional study was conducted among MBBS interns posted in the Department of Dermatology. Interns underwent multiple Mini-CEX encounters using a standardized assessment proforma. Scores from initial and subsequent encounters were compared and feedback responses were analyzed.

**Results:** There was a statistically significant improvement in mean Mini-CEX scores across all assessed domains after repeated encounters. Interns and faculty reported high satisfaction with Mini-CEX, particularly highlighting its role in improving clinical confidence and feedback-based learning.

**Conclusion:** Mini-CEX is an effective, feasible, and acceptable formative assessment tool for MBBS interns in dermatology, contributing significantly to competency development.

**Keywords:** Mini-CEX, Workplace-based assessment, Dermatology education, MBBS interns, Competency-based medical education.

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### Introduction

Assessment is an essential component of medical education since it not only assesses learning outcomes but also directs and influences students' learning behaviors. Traditional assessment approaches in undergraduate medical education have mostly focused on summative evaluations of cognitive knowledge, frequently overlooking real-time assessments of clinical performance and professional behavior [1]. Over the last two decades, it has become clearer that traditional assessment procedures are inadequate to ensure clinical competence among medical graduates. This awareness has prompted a worldwide trend toward outcome-oriented and performance-based

assessment methods in medical education [2]. Competency-Based Medical Education (CBME) is a significant revolution in medical education that prioritizes explicitly defined competencies, frequent assessment, and organized feedback. In CBME, assessment is viewed as an inherent element of the learning process rather than a distinct evaluative activity [3]. Formative evaluation is important in CBME because it helps to detect learning gaps early on, provides constructive feedback, and encourages reflective practice. When formative evaluation is included in ordinary training, evidence suggests that clinical performance and learner engagement improve

dramatically [4]. Workplace-based assessment (WBA) technologies have emerged as useful ways for evaluating clinical competency in authentic clinical settings. These approaches incorporate direct observation of learners during actual patient encounters, which improves the validity and reliability of assessment results [5]. Dermatology is a clinical specialty that necessitates proficiency in systematic history collection, careful visual inspection of skin lesions, diagnostic reasoning, patient counseling, and professional behavior. These competencies are best assessed through direct observation in clinical settings rather than written or oral exams [6].

The Mini-Clinical Evaluation Exercise (Mini-CEX) is a structured workplace evaluation instrument that evaluates various categories of clinical competence during brief, concentrated patient encounters. It enables teachers to directly watch interns and provide immediate, specific, and actionable feedback [7]. Previous research across clinical disciplines has shown that Mini-CEX is a viable and valid assessment instrument that increases clinical performance, feedback-based learning, and trainee confidence [8]. The implementation of CBME in India's medical education system has highlighted the need for practical and effective formative evaluation techniques that may be effectively integrated into ordinary clinical practice, particularly during internship training [9]. Despite its demonstrated effectiveness, there is little published research on the use and impact of Mini-CEX during dermatological posts for MBBS interns. As a result, the current study was designed to introduce Mini-CEX as a formative evaluation tool in dermatology and examine its impact on the clinical competence and learning experience of MBBS interns [10].

### Materials and Methods

This prospective interventional study was carried out over a six-month period among MBBS interns

assigned to the Department of Dermatology at a tertiary care teaching hospital.

### Inclusion Criteria:

- Interns who consented to participate
- Interns who completed at least two Mini-CEX encounters

### Exclusion Criteria:

- Interns absent during scheduled assessments
- Interns who did not complete minimum required Mini-CEX encounters

### Assessment Tool:

- Mini-CEX proforma assessing:
- History taking
- Physical examination
- Clinical judgment
- Communication skills
- Professionalism
- Overall clinical competence

Each domain was scored on a 9-point Likert scale.

### External Validity (External Criteria):

To enhance generalizability, standardized Mini-CEX guidelines recommended by CBME were followed. Multiple faculty assessors participated to minimize assessor bias. Assessment was conducted in routine outpatient settings without altering normal clinical workflow.

**Statistical Analysis:** Data were analyzed using descriptive statistics and paired t-test. A p-value <0.05 was considered statistically significant.

### Results

A total of 40 MBBS interns were included in the study. The mean age of the participants was  $23.6 \pm 0.8$  years, indicating a relatively homogeneous study population.

**Table 1: Demographic Profile of MBBS Interns (n = 40)**

Variable	Number	Percentage (%)
Male	18	(45%)
Female	22	(55%)
Mean age (Years)	23.6 ± 0.8	

Table 1 shows the demographic profile of the MBBS interns included in the study. A total of 40 interns participated, of whom 18 (45%) were males and 22 (55%) were females. The mean age of the participants was  $23.6 \pm 0.8$  years, indicating a relatively homogeneous study population.

**Table 2: Comparison of Mean Mini-CEX Scores before and After Intervention**

Domain	Initial Score (Mean ± SD)	Final Score (Mean ± SD)	p-value
History taking	5.2 ± 0.8	7.1 ± 0.6	<0.001
Physical examination	5.0 ± 0.7	7.0 ± 0.5	<0.001
Clinical judgment	4.9 ± 0.9	6.8 ± 0.7	<0.001
Communication skill	5.4 ± 0.6	7.3 ± 0.5	<0.001
Professionalism	6.0 ± 0.5	7.8 ± 0.4	<0.001

The comparison of mean Mini-CEX scores of MBBS interns before and after the intervention across various domains of clinical competence. There was a statistically significant improvement in scores related to history taking, physical

examination, clinical judgment, communication skills, and professionalism following repeated Mini-CEX encounters. The improvement observed in all domains was statistically significant with a p-value of <0.001.

**Table 3: Interns' Perception Regarding Mini-CEX**

Statement	Agree (%)
Improved clinical confidence	90%
Identified learning gaps	88%
Feedback was constructive	92%
Should be continued	95%

A majority of interns agreed that Mini-CEX improved their clinical confidence (90%) and helped in identifying learning gaps (88%). Constructive feedback was appreciated by 92% of interns, while 95% felt that Mini-CEX should be continued as a regular assessment tool during internship training.

### Discussion

The present study showed that using Mini-CEX as a formative workplace-based evaluation instrument improves the clinical competence of MBBS interns in the Department of Dermatology. The observed improvement in all examined domains demonstrates the effectiveness of direct observation and organized feedback in clinical training [11]. Repeated Mini-CEX interactions promote purposeful practice, allowing interns to gradually improve their clinical skills. Immediate feedback after observation helps learners understand their strengths and fix weaknesses, facilitating reflective learning [12]. The significant improvement in history-taking and physical examination skills is consistent with prior research, which found that Mini-CEX improves focused clinical observation and strengthens systematic patient evaluation [13].

Improvement in clinical judgment implies that Mini-CEX does more than just measure observable skills; it also develops clinical reasoning through discussion and feedback. This conclusion is consistent with previous research showing the role of WBA tools in improving diagnostic thinking [14]. Communication skills and professionalism improved significantly during the current study. Traditional examinations frequently fail to appropriately measure these dimensions, despite their importance for successful patient care and ethical medical practice [15]. Interns' positive perceptions of Mini-CEX show that this assessment approach is widely acceptable. Learner acceptance is critical for the longevity and efficacy of formative assessment technologies in typical clinical settings [16]. According to faculty members, Mini-CEX facilitated structured teaching and objective assessment. Previous studies have indicated similar findings, with instructors viewing Mini-CEX as a beneficial tool for focused

instruction and relevant feedback [17]. A comparison with previous studies in different clinical specialties demonstrates comparable increases in clinical performance, implying that Mini-CEX's educational advantages are consistent across disciplines [18]. The current study's findings clearly support the alignment of Mini-CEX with CBME principles, including continuous assessment, competency-based progression, and feedback-driven learning [19]. Incorporating Mini-CEX into dermatology internship postings may thus improve MBBS interns' preparedness for autonomous clinical practice while also contributing to the overall quality of undergraduate medical education [20].

### Conclusion

The present study demonstrates that the Mini-Clinical Evaluation Exercise (Mini-CEX) is an effective, feasible, and acceptable workplace-based formative assessment tool for MBBS interns posted in the Department of Dermatology. Implementation of Mini-CEX resulted in a statistically significant improvement in multiple domains of clinical competence, including history taking, physical examination, clinical judgment, communication skills, and professionalism.

The tool facilitated direct observation and timely, structured feedback, thereby promoting reflective learning and skill enhancement among interns. Positive perceptions from both interns and faculty further support the practicality and educational value of Mini-CEX in routine clinical settings. Incorporation of Mini-CEX into dermatology internship training aligns well with the principles of competency-based medical education and may contribute to better preparedness of interns for independent clinical practice.

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