

Feasibility of Implementing Mini-Clinical Evaluation Exercise (Mini-CEX) as a Formative Assessment Tool in Postgraduate Surgical Training

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ABSTRACT:

Background: Mini-CEX (Mini Clinical Evaluation Exercise) is extensively used in the west as a Workplace-based Assessment (WPBA) tool. However, its utility remains an infrequent in postgraduate medical training in Pakistan.

Methods: Forty-eight mini-CEX sessions involving 11 faculty members and 15 postgraduate trainees were conducted over a 3-month study period. Standardized American Board of Internal Medicine Mini-CEX evaluation form was used to evaluate the students. The faculty and trainees were asked to provide feedback for these sessions on questionnaires consisting of close- and open-ended questions.

Results: Faculty satisfaction with mini-CEX was high, with all agreeing that it was an appropriate method of trainees' assessment and teaching, and that it should be included in the curriculum. However, two-third of the faculty felt that it was not possible to assess students through mini-CEX more frequently. All trainees agreed that the sessions made them aware of their weaknesses and strengths. However, majority (73.3) complained that they were not given a chance to give reflection on their performance during the feedback session. Both residents and faculty suggested to incorporate Mini-CEX in curriculum.

Conclusion: It is feasible to use mini-CEX for formative assessment of residents.

Keywords: Workplace-based assessment, mini-clinical evaluation exercise, feedback

INTRODUCTION

Assessment drives learning. It is both summative and formative; the latter is designed to observe students' performance, identify gaps between the desired and actual performance, and give them feedback with the aim to improve their performance.^{1, 2, 3} Unfortunately, formative assessment in postgraduate training institutions, accredited by the College of Physicians & Surgeons Pakistan (CPSP), is not used as frequently as it should be. Patient-student encounters go unobserved with brief, if any, feedback from the supervisors, denying trainees a chance to correct and master their clinical skills.

Postgraduate medical education in Pakistan has recently undergone a paradigm shift to bring trainees at par with international standards. In 2017, CPSP introduced Competency-based model, which contain all competencies required of a successful doctor.⁴ The new training requirements have put an increasing demand on the supervisors, who now have to observe performance of surgical trainees in real patient-physician encounters and provide constructive and instant feedback to improve their skills. Workplace-based Assessment (WPBA) is a viable tool for this purpose.

Mini-CEX is extensively used in the west as a WPBA tool since it was introduced in 1995.^{5, 6} Each mini-CEX encounter involves 5-15-minute session, during which trainee performs a focused task on a real patient while an assessor observes and scores him/her using a structured rating form. After a brief discussion on the diagnosis and management of the case, a feedback session follows in which the learner is first given a chance to reflect on the performance before the assessor provides feedback.⁷ The direct observation of clinical skills of the learner and instant feedback guides learners to improve learning and master clinical skills. The validity, reliability and educational impact of mini-CEX is well-established.⁵⁻¹² With proven validity and reliability, Mini-CEX is a popular tool in postgraduate training in the west.

Mini-CEX is infrequently used as an WPBA tool in postgraduate institutions of Pakistan. Faculty's perception of mini-CEX as an additional workload, busy clinical schedules, shortage of support staff, inadequate infrastructure and poor facilities and dissatisfaction of trainees with this type of assessment etc. are some of the underlying causes identified,¹³ but the matter of fact is that few studies, exploring these reasons in local perspective, exist.¹⁴ There is a need to identify reasons hampering conduct of

mini-CEX in our institutions. Once identified, these barriers can be overcome with the aim to utilize Mini-CEX as a routine assessment tool in our postgraduate institutions.

Objective: The objective of this study was to determine feasibility of conducting mini-CEX as a routine Work Place Based Assessment tool in postgraduate training.

MATERIAL AND METHODS

This descriptive cross-sectional study was conducted at two constitute colleges of Dow University of Health Sciences including Dow Medical College and Dow International Medical College over 03 months; from July 2022 to September 2022. IRB approval was obtained from Dow University of Health Sciences (DUHS)

The study population included 11 faculty members and 15 post graduate trainees from Department of Surgery, all consenting faculty and post graduate trainee were in the study. The independent variable were the number of mini-CEX sessions, number and level of faculty members, and residency year of postgraduate trainee, while the dependent variable were the feasibility and satisfaction with the mini-CEX. The study used two pre-validated feedback questionnaires, one for the faculty and one for the postgraduate trainees, to collect data. Written permission through email for their use was taken from the author (Dr. Sarika Gupta, E-mail: sgguptasarika@gmail.com). Tools were adapted to local context after piloting it on two faculty members prior to the actual study. The tools were found to be relevant and easily understandable, so no amendments were required.

Written and informed consent were taken from all participants. Each mini-CEX session involved one assessor and one trainee and was conducted either in the outpatient or inpatient departments. The session involved direct observation and evaluation of a focused and brief trainee-patient encounter. The duration of each observation was 22-30mins followed by feedback. Standard protocol and procedure for the mini CEX was followed.

While the trainee performed the task, assessor scored him/her using Standardized American Board of Internal Medicine Mini-CEX evaluation form, with a 9-point rating scale (1-3: unsatisfactory, 4-6: satisfactory and 7-9: superior). Both the assessor and trainee filled out feedback forms at the end of each session, which included close and open-ended questions about their satisfaction with the mini-CEX session.

Research data was protected at all stages of the study by denying access to it to by unrelated persons. Research

participants were made aware of their right to refuse to participate or withdraw.

To determine percentages of faculty and trainees' satisfaction with mini CEX, Stata software 16.0 was used. Questionnaire feedback responses of participants were analyzed using descriptive statistics. Categorical variables were presented as percentages, while continuous variables were accessed as means.

RESULTS

This study was conducted at the Department of Surgery, Dow International Medical College and Dow Medical College of the Dow University of Health Sciences, Karachi, over a period of three (03) months; from July 2022 to September, 2022. Eleven (11) faculty members of the department of surgery and fifteen (15) general surgery postgraduates were enrolled in this study. Of the 11 faculty members, 03 (27.3 %) did not respond to request to conduct mini-CEX sessions, despite multiple reminders through email. Five (45.5%) faculty members were not able to complete their targeted session.

Each postgraduate was assigned 4 sessions with different consultants. The number of mini-CEX sessions actually conducted remained less than our expectations. A total of 60 sessions were planned but only 40 sessions were actually conducted during the study period, giving us a good though less-than-expected feasibility rate of 80%.

The total duration of sessions ranged from 22 - 30 minutes with an average duration of 25 minutes. Each performance was marked using standardized American Board of Internal Medicine

Mini-CEX Evaluation form (annexure A). Marking was done over a 9-point rating scale (1–3: unsatisfactory, 4–6: satisfactory and 7–9: superior). Clinical skills evaluated included medical interviewing/history taking skills, physical examination skills, humanistic skills and professionalism, diagnostic skills, therapeutic skills, counseling skills, and organizational skills.

Faculty satisfaction with mini-CEX was high, with all agreeing that it was an appropriate method of trainees' assessment and teaching. Seven (87.5%) faculty members were of the opinion that mini-CEX sessions required more commitment in terms of time than the traditional assessment methods. Multiple reasons cited by the faculty for not being able to perform frequent mini-CEX sessions or not being able to do it at all included clinical workload (87.5%), lack of proper place and facilities for the sessions (37.5%), and feeling inadequate in conducting the sessions or giving feedback (25%). One (12.5%) faculty opined that frequent mini-sessions did not give enough time to the trainees to improve and hence they should not be repeated too soon. However, all (100%) faculty members strongly supported to incorporate Mini-CEX in the curriculum (Table 1).

All trainees agreed that the sessions made them aware of their weaknesses and strengths. None reported feeling uncomfortable or coerced by the continuous observation by assessor while performing the designated task. Incorporation of mini-CEX into their training as a regular feature was supported by nine (80%) of the residents. Majority of trainees (73.3%) cited failure of the assessors to give them a chance to reflect as the main reason for their dissatisfaction of mini-CEX's inclusion as a routine assessment tool (Table 2).

Table 1: Faculty's feedback on a 5-point Likert scale (n=8)

Statement	1 Strongly disagree	2 Disagree	3 Cant say	4 Agree	5 Strongly agree
Mini-CEX sessions are an appropriate method of trainees' assessment and teaching	-	-	-	05 (62.5%)	03 (37.5%)
I feel that 20-30 minutes was reasonable time to complete the exercise	-	-	-	05 (62.5%)	03 (37.5%)
I found it difficult to examine the students more frequently	-	-	01 (12.5%)	01 (12.5%)	06 (75%)
I feel that mini-CEX can sample more areas for assessing student's competence than the traditional assessment methods	-	-	-	04 (50%)	04 (50%)
Mini-CEX requires more commitment in time than the traditional assessment methods	-	01 (12.5%)	-	06 (75%)	01 (12.5%)
Mini-CEX should be incorporated for formative assessment in curriculum	-	-	-	02 (25%)	06 (75%)
Mini-CEX has improved my own attitude towards residency training	-	-	-	03 (37.5%)	05 (62.5%)
I was comfortable giving feedback to the candidate.	-	01(12.5%)	-	03 (37.5%)	04 (50%)
I believe training in giving feedback would improve my feedback and make it more effective	-	-	-	02 (25%)	06 (75%)

Table 2: Reasons (given by faculty) for not able to conduct mini CEX session more frequently or not conducting the session

Reasons	Number	Percentage
Clinical workload	07	87.5
Lack of proper place for performing sessions	03	37.5
Feeling inadequate in conducting the sessions or giving feedback	02	25
Feeling that trainees need time to improve their skills after previous session	02	25

Table 3: Trainees' feedback on a 5-point Likert scale (n=15)

Statement	1 Strongly disagree	2 Disagree	3 Can't say	4 Agree	5 Strongly agree
I was made aware of the competencies being assessed	-	-	-	6 (40%)	9 (60%)
I felt comfortable while being examined by many assessors	-	-	-	11 (73.3%)	4 (26.7%)
I was not able to perform well due to constant observation	-	13 (86.7%)	01 (6.7%)	01 (6.7%)	-
Duration for examination exercise was adequate	-	-	02 (13.3%)	13 (86.7%)	-
The feedback made me aware of my weak points	-	-	-	11 (73.3%)	04 (26.7%)
The feedback made me aware of my strong points	-	-	-	11 (73.3%)	04 (26.7%)
I felt frightened the way feedback was given	-	01 (6.7%)	03 (20%)	07 (46.7%)	04 (26.7%)
The duration of feedback was adequate	-	-	11 (73.3%)	03 (20%)	01 (6.7%)
I was given opportunity to put my views during feedback	01 (6.7%)	10 (66.7%)	-	04 (26.7%)	-
Mini-CEX should be incorporated for formative assessment in the curriculum	-	03 (20%)	-	09 (60%)	03 (20%)
I am satisfied with this method of assessment	-	-	01 (6.7%)	10 (66.7%)	04 (26.7%)
Mini-CEX enhanced my skills in medical interviewing	-	-	-	11 (73.3%)	04 (26.7%)
Mini-CEX enhanced my skills in physical examination	-	-	-	09 (60%)	06 (40%)
Mini-CEX made me practice with professionalism	-	-	05 (33.3%)	06 (40%)	04 (26.7%)
Mini-CEX enhanced my skills in clinical judgment	-	-	07 (46.7%)	03 (20%)	05 (33.3%)
Mini-CEX enhanced my counselling skills	-	-	07 (46.7%)	04 (26.7%)	04 (26.7%)
Mini-CEX enhanced my skills in organization skills	-	-	04 (26.7%)	07 (46.7%)	04 (26.7%)
Mini-CEX enhanced my overall clinical competence	-	-	04 (26.7%)	06 (40%)	05 (33.3%)
Biggest advantage of Mini-CEX	<ul style="list-style-type: none"> • Made me aware of my strengths and weaknesses 09 (60%) • Immediate feedback 04(26.7%) • Led to further reading on the topic 01 (6.7%) • Felt satisfied of being observed by the faculty 01 (6.7%) 				
Biggest disadvantage of Mini-CEX	None				

DISCUSSION

Mini-CEX (Mini-clinical evaluation exercise) is a WPBA assessment tool. It involves an assessor who rates a learner on his/her performance on a brief and focused task in real clinical situation using a structured rating form. The observation is followed by constructive feedback on the performance.

In our study, five (45.5%) faculty members partially completed their targeted sessions, while three (27.3 %) did not conduct any session. Only 3 faculty members completed their designated sessions, giving a faculty completion rate of 27.3%. The number of mini-CEX sessions conducted remained less than our expectations. A total of 60 sessions were planned but only 40 sessions were conducted, giving us a good, though less-than-expected, feasibility rate of 80%. This is in contrast to a similar study which reports completion rates of 98.1% and 100% during the first year and the following 5 months, respectively.¹⁷ We assume that our low feasibility was due to short duration of the study. This is strengthened by the fact that another study, performed for a period of 6 months, cites completed 50% of its planned 6 encounters per resident.¹³ Low motivation of the faculty was another reason for low completion rate cited in a study by Massie J and Ali JM.¹⁸

Most (87.5%) of the faculty members found it difficult to examine students more frequently due to heavy clinical workload, which was identified as the commonest hindrance in conducting Mini-CEX. Spacing out Mini-CEX sessions throughout the academic year can overcome the problem. Further issues faced by the faculty while conducting the Mini-CEX include, it require more commitment in terms of time than traditional assessment methods (75%), lack of proper place for performing sessions (37.5%), feeling inadequate in conducting the sessions or giving feedback (25%), and feeling that trainees need time to improve their skills after previous session (25%). Similar concerns were reported in other studies also.^{22, 23} Rawekar et al. proposed that paucity of time mandates that mini-CEX sessions should be taken at different time slots, since if conducted during clinical working hours, both the faculty and the trainees and faculty will be in a hurry to get back to their routine work schedule.²¹ Another study cites lack of faculty training in conducting mini-CEX sessions and giving feedback as another obstacle in assessing students more frequently.²⁴ We believe that these hurdles can be overcome through regular use of mini-CEX, faculty training, and constant reinforcement.

However, despite their inability to perform mini-CEX more frequently, all faculty members included in our study were in favor of incorporation of mini-CEX in the curriculum. Other studies support similar views.²⁵

A high faculty satisfaction with mini-CEX was identified; each faculty who participated in the study (100%) agreed that mini-CEX was an appropriate method for trainees' assessment and helped them improve their professional skills. Several studies report a similar faculty satisfaction rate with mini-CEX.^{13, 19} Assessors' satisfaction with mini-CEX is also reported by Rawekar et al. and Gupta et al, citing its potential for instant and independent feedback as the main reason for its effectiveness.^{20, 21}

Regarding the trainee perception of Mini-CEX in our study, all trainees showed satisfaction with mini-CEX affirming that these sessions made them aware of their weaknesses and strengths and helped them to improve their clinical skills. A systemic review by Miller and Archer also cites a high trainees' satisfaction rate due to improvement in performance.²⁶ Majority of postgraduate trainees (86.7%) felt comfortable in performing the tasks under direct observation of the faculty. This is in contrast to another study which reports 40% of the students complaining that they felt uncomfortable to perform well due to constant observation.¹³ A majority of trainees (73.3%) in this study, however, showed dissatisfaction with the feedback as they were not given a chance to reflect on their performance during the feedback session. We presume this was due to paucity of time in the busy outpatient

clinics and scheduled operation lists. That reflection is an important part of feedback and plays an important role in trainees' satisfaction can be deduced from very satisfaction rates cited by Bashir et al. and Gupta et al. where 63.2% and 80%, students respectively commented that they were given a chance to give reflection on their performance during the feedback session.^{13, 20}

CONCLUSION

Mini-CEX has a high acceptance rate for both faculty and postgraduate trainees. Feasibility rate for mini-CEX in our institution can be improved through faculty training for mini-CEX, regular use of mini-CEX, and constant reinforcement of the faculty. We strongly recommend regular use of mini-CEX in postgraduate training program.

The limitation of our study were small number of faculty members and postgraduate trainees, short duration of the study and involvement of a single discipline.. We believe that by overcoming these limitations, the results can be made generalizable.

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