



Introduction of Mini-CEX as A Formative Assessment Tool for Postgraduates In Pediatric Department

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ABSTRACT

BACKGROUND: Mini-CEX plays an important role in competency based medical education and well accepted in western countries.

OBJECTIVES: To determine feasibility and acceptability and to know the perception of postgraduate students and faculties regarding mini-CEX as an assessment tool.

METHODS: 3rd year postgraduate students were evaluated for medical interviewing and physical examination skill. Scoring was done on mini-CEX rating form. Time taken to conduct the session, to provide faculty feedback was noted. Students and faculties perception was recorded via feedback questionnaire.

RESULTS: Two sessions with seven students per session were done. Total 14 encounters by seven faculties were planned and completed successfully. No difficulty faced regarding timing, availability of students, faculties and patients for conducting sessions. Mean duration for conducting mini-CEX was 5.8 Vs 10.12 and for providing faculty feedback was 4.24 Vs 5.91 for 2 sessions respectively. Mini-CEX score evaluation showed less scoring in physical examination competency and statistically insignificant improvement in both tested competencies in 2nd session. Faculties found mini-CEX as satisfactory and students found it more than satisfactory. 72% faculties and all students agreed to incorporate mini-CEX in postgraduate curriculum. The apprehension felt by faculties (28%) was requiring more commitment. The provision of constructive feedback was perceived as one of the best part of this tool by the faculties (100%). Students (65%) were concerned of getting anxious due to direct observation.

CONCLUSION: Mini CEX is acceptable assessment tool by the faculties and students and should be incorporated in the postgraduate curriculum.

Keywords: Acceptability, Faculty, Feasibility, Mini-CEX, Pediatric, Postgraduate student.

INTRODUCTION

Assessment plays a central role in medical curriculum. It completes the learning process by measuring students' progress and achievement regarding curriculum outcome. Several tools are available for this purpose. Some of these focus on cognitive domain. New methods emphasize on assessing student clinical skills.^[1]

Mini-CEX is an upshot of clinical evaluation exercise (CEX) and done for objectively assessing students in some board certifications.^[2] CEX is a very objective way of assessment of the students because most domains are covered with objectivity and is reproducible. It had an inherent disadvantage of being time consuming. It is replaced by a

modification called as mini-CEX. This is a 15-minute interaction of doctor/patient designed to assess the clinical skills, attitudes and behavior of students essential to providing high quality care. Students are asked to take 4 to 6 encounters during the year with different observers for each encounter. Different institutions have different types of recording forms, but a generic form is commonly available.^[3] Studies abroad have shown it to be an effective method.^[1,3,4] Systemic review also reveals its importance as a tool of assessment.^{5,6]} Indian literature is scant on feasibility and effectivity.^[7,8] This study will aim to find out if it is feasible and acceptable to conduct it for postgraduate students in our setting.

METHODS

Study design: Observational study.

Setting: Pediatric inpatient ward of a tertiary care hospital with a medical college.

Study period: 5 months (June 2019 to October 2019).

Participants: 3rd year pediatric residents and 9 faculty members.

Study tool: Mini CEX format by Norcini et al (3). Feedback Questionnaire peer reviewed (5 Likert scale) for faculty and residents.

Outcome: Perceptions of the residents and faculty and score on mini CEX form.

Data collection: This study was done as part of advanced course in medical education (ACME) project. After getting an ethical approval from the institutional committee, a sensitization class was kept for faculty and residents separately to familiarize them with the mini CEX form and the questionnaire. After sensitization, consent from residents was taken and 9 residents and 9 faculties were enrolled. We had 2 encounters 1 month apart. The resident faculty pair was done randomly picking up coded charts. Patients of similar complexity from hospitalised patients of pediatric ward were selected and neither resident nor faculty knew which patient they were to receive. Two domains, medical interviewing skills and physical examination were assessed in both encounters. Scoring of Mini-CEX assessment for each student was done using Mini-CEX rating form where score is interpreted as unsatisfactory (1-3), satisfactory (4-6) and superior (7-9). Faculties gave feedback to the residents after mini-CEX in each encounter after

completing the session. Feedback of residents was also recorded in the mini CEX form. Students and faculties responses were graded on 5 point Likert scale as: 1 – Strongly agree, 2 – Agree, 3- Neutral, 4 – Disagree, 5- Strongly disagree. Overall satisfaction with Mini-CEX was evaluated on 0 (low)-10(high) scale provided in rating form. Time taken for conducting the mini CEX and giving feedback was noted. Questionnaire forms for perception of residents and faculty were also filled by both faculty and residents.

Statistical analysis: Data were entered in Microsoft excel and analysis was done using Open Epi software. Comparison of mean score between 2 sessions was analyzed using independent 't' test. *P* value < 0.5 was considered significant.

RESULTS

We carried out 2 mini CEX sessions 1 month apart with seven 3rd year PG students as participants. Total 14 encounters were done. Each resident was evaluated by one faculty member (3 Additional Professors, 3 Assistant Professors and 1 senior resident). 5 faculty members were common for both the sessions though faculty- student pair was different. Both sessions were conducted on Inpatient setting with patients of same level complexity. Students were directly observed by the allotted faculty throughout. Assessment was done for 2 domains (medical interviewing skill and physical examination skills) in both sessions. Checklist was provided to faculties to maintain uniformity of assessment.

The mean time to conduct the session was 5.8 minutes in 1st session and 10.12 minutes in 2nd session. Mean time for providing feedback by faculties was 4.24 seconds Vs 5.91 seconds for two sessions respectively.

Table 1: Of the 2 competencies tested, students scored less in physical examination skill in both sessions. In the second session mean score for both medical interviewing skills and physical examination skills was improved, though not statistically significant.

Table 2: At the end of session students and faculties were asked to rate their level of satisfaction on 0 (low)-10(high) scale regarding this method of assessment in Mini CEX rating form. Overall

faculties found mini CEX as satisfactory method of assessment, while students found it better (more than satisfactory) than traditional method of assessment. Satisfaction score of the student was greater for the second session than first one, though not statistically significant.

Feasibility of mini CEX as an assessment tool: We conducted two sessions, one per month so it didn't increase the workload for the faculty members. Faculties on emergency / OPD duties didn't take part in the exercise. There was little apprehension regarding how to conduct mini CEX but after an orientation session all faculties were willing to conduct mini CEX. The sessions were planned during routine teaching hours of the PG students which they were accustomed to and hence didn't affect their clinical work. Majority of faculty also found it was easy to conduct.

Acceptability of mini CEX as an assessment tool by faculty:

As described in table 3 the perception regarding acceptability of mini CEX as a method of assessment was assessed by structured questionnaire which was filled up by each faculty at the end of each session.

The good things about mini CEX perceived by the faculties were: Provision of feedback in a constructive manner at the end of session (100%), direct observation of the students (94%), more structured method of assessment than traditional one (74%) and improved their own attitude towards residency training (72%).

86% faculties found it easy to conduct and 93% agreed that 10 – 15 minute time was enough to complete the exercise as well as to assess the student.

72% faculties agreed to incorporate mini CEX as an assessment tool in the PG curriculum. Overall faculty satisfaction proportion was 86%.

Regarding multiple sessions 28% felt it difficult to conduct it on a frequent basis and 72% agreed that it requires more commitment.

Few comments by faculty were;

- ✓ *It is a good method of examination as we come to know the deficiencies in taking history and performing examination of the resident on the spot.*

- ✓ *Frequent mini CEX is needed to train & sensitize student in evaluating patient's history.*

Acceptability of mini CEX by students based on their feedback:

Students were given orientation regarding mini CEX before being subjected to the assessment and all except one student agreed that orientation session was informative and appropriate. As seen in table 4, 50% students appreciated that they were given equal opportunity to put forward their views. 72% found it helpful in a way to identify their strength and weakness through feedback provided by the faculties. The duration was felt adequate by 86% of the students. 65% students felt that they were apprehensive due to direct observation by the faculties and 50% of them felt that constant observation affected their performance. Overall, 64% students were satisfied with mini CEX as a method of assessment.

All students agreed to have more such sessions of mini CEX. All students except one were comfortable with multiple sessions and found it helpful. Five of seven students felt an improvement in their performance in the 2nd session.

A comment by student:

- *It was helpful to understand where I still need to work on to improve my clinical skills.*

DISCUSSION

In our study, our faculty found mini CEX to be an acceptable and feasible method for formative assessment in postgraduate training. Perception of student also was that it was more structured and gave insight where improvement was needed as feedback was also incorporated.

In this study we had planned 14 encounters by 7 faculties, and we were able to do all encounters (100%). Some studies^[8,9] have reported less than expected encounters (50%) due to busy schedule of faculty, examinations and vacation of faculty and residents.^[9] MK Joshi et al were able to complete the required encounters by modifying the time schedule during the project for convenience.^[8]

In our study we assessed two domains, physical examination skills and medical interviewing skills.

In the second session, the scores improved from 4.72 to 5.2 for physical examination and from 5.14 to 5.4 in medical interviewing skills though not statistically significant. This has been observed in other studies.^[8,9,10] Norcini reported maximum improvement in clinical judgment and organization and efficiency whereas lowest in professionalism.

We chose indoor admitted patients in the general ward. This was also done in study by Sarita et al.^[9] Some studies have included patients of varying complexity^[6,8], which actually is advisable but we wanted to remove the bias hence we tried to use patients of same complexity and from same area.

As far as acceptability of this method is concerned, in our study 86% of the faculties were satisfied and 72% agreed that it should be incorporated as a formative assessment tool. Main reasons agreed upon were that it allowed direct observation, has feedback component and were satisfied with the method. Sarika et al^[9] also found that faculty felt it was a better method as it had potential for immediate and individual feedback. Joshi et al^[8] found it to be an acceptable method for surgery residents. Some studies have shown apprehension of faculties regarding time taken and awareness about the method of conduction.^[6,11] The only apprehension from our faculty being that repeated conduction over all semesters may not be possible.

In our study we did not have difficulty in engaging workforce or lack of patient availability, lack of stationary (this was managed at departmental level). This was addressed in the study by Joshi et al.^[8] Faculty in our study did not find it time consuming as it took average of 15-20 minutes inclusive of feedback and found it easy to conduct. Joshi et al^[8] also reported similar findings. Majority in our study felt it was more structured.

Student perception

64 % students were satisfied with the method and 100% felt that feedback was provided in a constructive manner. This has been seen in other studies as well.^[8,9,11] Majority wanted more sessions and also incorporation in our curriculum. Sarika et al also found this in their study. Anxiety about being directly observed was a concern by many residents (65% in our study). This has been reported in other studies also^[8,9] though some authors did not find this

in their study.^[11,12] 100% felt feedback was given in a constructive manner and helped to improve their skills, this has also been reported by Sarika et al.

CONCLUSION

Mini CEX is acceptable as an assessment tool by the faculties and students and should be incorporated in the postgraduate curriculum.

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Table1: Mini CEX score evaluation (n= 14)

Mini CEX competency	Session 1 Mean \pm S.D.	Session 2 Mean \pm S.D.	p-value
Medical interviewing skill	5.14 \pm 1.34	5.4 \pm 0.97	0.6855
Physical examination skill	4.71 \pm 1.79	5.2 \pm 1.38	0.5768

Table 2: Evaluator and Student satisfaction score analysis

Satisfaction score	Session 1 Mean \pm S.D.	Session 2 Mean \pm S.D.	p-value
Evaluator	6.28 \pm 1.97	6.0 \pm 1.63	0.7770
Student	7.85 \pm 1.46	8.14 \pm 0.64	0.6432

Table 3: Faculty feedback

Sr no	Questionnaire	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
1	Mini CEX should be incorporated for assessment in the curriculum	0	10(72)	4(28)	0	0
2	Satisfied with the method of the assessment	1 (7)	11(79)	2(14)	0	0
3	Allows direct observation of the students	5(36)	8(58)	0	1(6)	0
4	It improved my own attitude towards residency training	0	10(72)	4(28)	0	0
5	This feedback has been provided in a constructive manner	0	14(100)	0	0	0
6	Mini-CEX is a more structured method than other methods	1 (9%)	9(65%)	3(21%)	1(9%)	0
7	It is more time consuming than other methods	0	3(21%)	2(14%)	9(65%)	0
8	10-15 minutes were enough to complete the exercise	3(21%)	10(72%)	1(7%)	0	0
9	It took 10-15 minutes for assessing each student	1(7%)	13(93%)	0	0	0
10	It was easy to conduct	2(14%)	10(72%)	1(7%)	1(7%)	0
11	Difficult to assess students on such frequent basis	0	2(28%)	2(28%)	3(43%)	
12	Requires more commitment	1(7%)	9(65%)	3(21%)	1(7%)	0

Table 4: Student feedback

Sr no	Questionnaire	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
1	It should be incorporated in our curriculum	5(36%)	6(43%)	3(21%)	0	0
2	We should have more such sessions	6(43%)	8(57%)	0	0	0
3	I am completely satisfied with this method of assessment	6(43%)	3(21%)	4(29%)	1(7%)	0
4	It was more time consuming	3(21%)	3(21%)	1(7%)	5(36%)	2(14%)
5	I was given equal opportunity to put forward my views	3(21%)	4(29%)	1(7%)	3(21%)	3(21%)
6	This method made me apprehensive	4(29%)	5(36%)	2(14%)	1(7%)	2(14%)
7	It gave me a fair idea of my strengths and weaknesses	5(36%)	5(36%)	1(7%)	2(14%)	1(7%)
8	Duration of assessment was adequate	6(43%)	6(43%)	0	1(7%)	1(7%)
9	I was unable to perform due to constant observation	3(21%)	4(29%)	5(36%)	1(7%)	2(14%)
10	I was well informed about the competencies that will be assessed	7(50%)	6(43%)	0	0	1(7%)
11	Multiple session were comfortable and helpful	4(58%)	2(28%)	1(14%)	0	0
12	My performance improved with successive session	3(44%)	2(28%)	2(28%)	0	0