Research Article

EVALUATION OF RESIDENTS AS TEACHERS

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ABSTRACT

Postgraduate trainees, especially in basic sciences should be competent in teaching. Generally, resident teaching competence is not assessed through any other means except feedback from learner's comments. We developed and evaluated a resident teaching skills assessment module using "standardized" students. Faculty observers rated residents using a customized rating performa developed to assess teaching competencies. It was found feasible, acceptable, and valuable to all the residents, students, and faculty who participated.

INTRODUCTION

Residents are the primary teachers for medical students, nursing students and other paramedical staff and spend considerable time in teaching especially in the pre-clinical subjects (Brown, 1970). While teaching is an important aspect of the resident's job, there are not many designs and implementations of practical evaluations of resident's teaching skills. Generally this is based on non-standardized impressions from faculty and medical students. Some western countries have introduced "resident as teacher" curricula and the medical educators have explored the value of performance-driven assessment of teaching skills (Wipf *et al*., 1995). First reported in the literature in the early 1990s, objective structured teaching exams (OSTEs) are modelled after objective structured clinical exams (OSCEs) but targeting teaching skills. Standardized students (like standardized patients in an OSCE) are trained as learners (Ellen *et al*., 1994). Every participant resident rotates through many stations where ratings are standardized. There is a need for an objective, reproducible, and performance-based evaluation module of teaching skills and formative feedback to the residents. We conceived, develop and evaluated teaching stations for medical residents with the goal to create a high-quality, practical, formative assessment of residents teaching skills.

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OBJECTIVE

To develop and evaluate objective structured teaching exams (OSTEs) for the residents for practical and formative assessment of resident's teaching skills.

MATERIALS AND METHODS

We prepared objective structured teaching exams for our residents. They had 15-20 minutes to perform teaching with the standardized student in each scenario. Faculty observers, the standardized students, and the residents themselves all independently completed a separate rating form after following each encounter. After the rating forms were completed, residents received feedback from faculty and students to promote further improvement.

Development of teaching station

Identifying teaching competencies

Through review of literature four core teaching competencies were defined. These were:

- Establishing rapport with the learner
- Assessing the learner's need
- Demonstrating instructional skills

Relevant knowledge (Harden and Crosby, 2000; Neher *et al*., 1992 and Skeff *et al*., 1992)

Developing teaching scenarios

Teaching scenarios were developed that matched resident's responsibilities, were realistic and reproducible, and could be observed in a limited time. The scenarios were:

- Teaching a student how to perform venous cut-down on a cadaver
- Teaching a student how to feel various peripheral pulses using anatomical landmarks and its clinical applications
- Helping a student to understand the disposition of peritoneum in a cadaver
- Teaching a student the anatomical basis of surgical incisions over anterior abdominal wall of the cadaver; their advantages and disadvantages
- Teaching a student the actions of laryngeal muscles and laryngoscopy in a dissected specimen of larynx with tongue

They were reviewed by faculty for realism and timing. Each teaching competency was assessed in each teaching scenario.

Training of standardized students and faculty observers

Five medical students were trained to standardize their rating. To enhance faculty rater reliability, faculty for the study sat together and streamlined their rating.

Protocol for assessing teaching competencies

We assessed the resident's teaching performance from three perspectives:

- Faculty
- Students
- Residents

A rating form was developed for the study.

- The faculty used it to assess the four teaching competencies and three global   assessments of teaching performance (Table 1)
- Standardized students rated global satisfaction on a 4-point scale
- Residents evaluated their own teaching performance using the same 9-point scale as faculty Table 1. Immediately following all the scenarios, residents, students, and faculty completed a questionnaire that addressed case difficulty and educational value of the experience. We determined mean scores for the specific teaching competency scales by faculty and the global ratings by faculty, residents, and students. We compared mean global ratings by faculty and residents. Global ratings were also dichotomized to reflect "done excellently" (mean > 6.5) or not.

Subjects

Five residents participated in the OSTE along with five faculty members as observers and five students as standardized learners.

OBSERVATIONS

The faculty evaluation was done on a scale of 1 to 4, except for the three global assessments, which were on a scale of 1 to 9

Table 1. Evaluation measures used and mean performance in all teaching stations

Evaluation Measures	Mean
A) Faculty evaluation of teaching competence specific teaching competencies (4-point scales)	
a) Rapport building	3.3
b) Assessment of learners needs	3.0
c) Demonstrating instructional skills	3.0
d) Knowledge base demonstrated	2.8
Global performance (9-point scales)	
a) Overall teaching performance	6.5
b) Communication skills	6.8
c) Knowledge demonstrated	6.5
B. Resident self-assessment for overall case performance (1 item)	5.7
1 = needs improvement, 9=done excellently	
C) Student evaluation of resident's teaching competence (1 item)	3.4
1 = not satisfied 4 = very satisfied	

- *1 to 3 = needs improvement*
- *4 to 6 = done well*
- *7 to 9 = excellent*

Mean for each of the four competencies is the average of the specific items for that competency.

Teaching competency scores

Faculty global overall teaching scores ranged from a mean of 6.2 to 6.8. Faculty rated 60% of residents as excellent (mean > 6.5), whereas only 40% of residents thought they taught excellently. In comparison, students rated 60% of residents $\geq$ 3.5 on the 4-point satisfaction scale; supporting an association between faculty and student ratings.

Scale reliability and validity

All four mean competency scores significantly correlated with three global faculty ratings. Faculty global teaching performance scores correlated with resident's self-evaluation and student score, supporting convergent validity.

Teaching stations are acceptable and educational

Post-OSTE, the residents reported that the teaching scenarios were educational and the faculty provided valuable feedback. The faculty reported that it was good opportunity to give feedback on skills observed. All students described participation as highly educational.

DISCUSSION

A practical based assessment module was developed for the resident teaching skills that included individualized feedback. There were significant correlations and associations among ratings of teaching competencies from three perspectives-faculty, students and the residents themselves. This assessment

method is reliable, valid, and measures resident teaching skills. Morrison *et al.,* 2002 demonstrated that a time-intensive, teaching assessment similar to this can reliably measure resident teaching skills.

This study has its own limitations. While resident's scores increase with training level, we do not yet know whether this can be attributed purely to improved teaching skills or nonspecific evolution of knowledge and professional maturity. Further studies are needed to clarify the distinct development of teaching behaviors. While a weakness in study design, this proved to be an asset in providing individualized feedback following each case. It was addressed by consensus building, calibration and standardization of faculty rating. The teaching stations allow for direct observation of learners, provide faculty valuable information about what residents can actually teach and thereby inform teaching expectations and refinements. Assessing teaching underscores the importance on teaching. The scenarios and feedback exemplify expectations of best teaching practices for faculty and residents.

Further research is needed to establish inter-and intra-rater reliability of these measures, seek further validation against other criteria such as teaching ratings by learners during varied setting and to expand the cases and competencies tested. Reliable and valid OSTE assessments can provide outcome measures with which to test the effectiveness of teaching curricula and postgraduate trainees.

CONCLUSION

We found that integrating teaching into as OSCE was practical and improved the objectivity of assessment of residents teaching skills. The general and reproducibility of this method and approach needs to be evaluated further because teaching is an essential element of medical residency programme. Faculty evaluation was done on a scale of 1 to 4, except for three global assessments, (scale of 1 to 9)

- 1 to 3 = needs improvement
- 4 to 6 = done well
- 7 to 9 = excellent

Performa evaluation instrument performa for assessing mean performance

A. Faculty evaluation of teaching competence Specific teaching competencies (4-point scales)
Rapport building
1. Communicates nonjudgmental, respectful, and supportive attitude (acknowledges challenge).
2. Exhibits appropriate nonverbal behavior.
3. Recognizes emotions (insecurity, stress)
4. Responds to emotion
Assessment of learner's needs
5. Assesses knowledge gaps (asks student what he knows/does not know)
6. Assesses skills (asks student to demonstrate)
Demonstrating instructional skills
7. Asks learner to plan
8. Probes for supporting evidence/thought process
9. Gives information/teaches skills in small chunks
10. Provides feedback on specific knowledge
11. Checks learner's understanding of what was taught
12. Invites questions
Knowledge base demonstrated
13. Case-specific items
Global performance (9-point scales)
14. Overall teaching performance
15. Communication skills
16. Knowledge demonstrated
B. Resident self-assessment for overall case performance (1 item)
1 = needs improvement, 9 = done excellently
C. Student evaluation of resident's teaching competence (1 item)
1 = not satisfied
4 = very satisfied

Since most day-to-day resident teaching occurs out of sight, the opportunity for faculty to observe directly and provide feedback is important and eye opener. Other studies confirm that residents find teaching stations valuable (Orlander *et al*., 1994). Our residents felt that the key ingredients were that clinically oriented teaching pose challenges, observers were respected teachers, and standardized students were given valuable feedback. Faculty commented that observing many residents perform the same teaching task was valuable in calibrating normative resident skill expectations. According to them they gained insights on their own teaching as well. The students reported that this experience helped them shape their own views and understanding of teaching and found that standardized learners benefit by improving their own communications and teaching skills (Sasson *et al*., 1999).

Mean for each of the four competencies is the average of the specific items listed for that competency.

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