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Teaching Effectiveness: Preparing Occupational Therapy Students for Clinical Practice

Abstract

Medical educators must examine the ability of teaching methodologies to prepare students for clinical practice. Two types of assessment methods commonly used in medical education include the Short Objective Structured Clinical Examination (OSCE) and the Integrated Performance Procedural Instrument (IPPI). The use of these methods in occupational therapy (OT) education is less understood. With the increasing number of students enrolled in programs, faculty face challenges to examine how clinical competence is established using data to determine teaching effectiveness. This study examines two educational methodologies used in OT curriculum: the long written case study (IPPI) and short performance-based OSCE. The authors describe the effectiveness of each examination as it relates to student performance in clinical practice (as measured by the Fieldwork Performance Evaluation [FWPE]). The findings obtained from separate focus group sessions with faculty and students further provide insight into the advantages and disadvantages of the educational methodologies.

Keywords

Objective Structured Clinical Examination (OSCE), Integrated Performance Procedural Instrument (IPPI), case-based, competency-based

Cover Page Footnote

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Credentials Display and Country

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Health care educators are interested in the ability of teaching methodologies to prepare students for clinical practice. Two types of assessment methods commonly used in medical education are the Short Objective Structured Clinical Examination (OSCE) and the Integrated Performance Procedural Instrument (IPPI). Both are cited as helpful in preparing students for clinical practice. The use of these methods in occupational therapy (OT) education is less understood. Application and evaluation of these assessment methods in OT education may help inform curricular decisions.

Researchers suggest that a variety of educational methodologies effectively prepare students for clinical practice (Brydges, Carnahan, Safir, & Dubrowski, 2009; Leaf et al., 2009; McKinley et al., 2008; Wilkinson, Campbell, & Judd, 2008). For example, Brydges et al. (2009) reported that self-guided study groups focusing on the process performed better than those focusing on the outcome. Wilkinson et al. (2008) reported that the long case study assessment was generally a reliable tool, but it was most reliable when used with other assessments or when more than one case was presented. Durning et al. (2012) found that the preclinical teaching format did not affect subsequent clinical performance. The authors compared student learning outcomes from OSCE with written cases to determine effective teaching formats. Nestel, Kneebone, Nolan, Akhtar, & Darzi (2011) examined students' responses to the OSCE and the IPPI. Nestel et. al (2011) described the merit of both approaches and found that the IPPI provided real-life, authentic practice and the OSCE

helped students prepare for practice. Limited research on the use of clinical-based examinations specific to OT education exists.

The OSCE refers to a competency-based examination and generally includes the physical demonstration of clinical skills (Townsend, McLivenny, Miller, & Dunn, 2001). Long OSCE formats include multiple stages of performance-based skill assessments (Townsend et al., 2001). The assessment requires students to select from several skills as they go through a series of stations (Nestel et al., 2011). Short OSCEs can consist of asking students to complete a short competency check (Nestel et al., 2011). While this is less time consuming, some faculty question whether testing a few skills is sufficient to measure clinical competency. Others suggest that students must learn to incorporate clinical reasoning while performing clinical skills. They must demonstrate the application of the process (Wilkinson et al., 2008).

The IPPI is similar to the OSCE but requires that students work through an entire case; they may complete procedures at each station, but are working through one case throughout (Kneebone et al., 2002; Nestel et al., 2011). This requires the students to engage in clinical reasoning specific to the provided case and utilize a client-centered approach. Harden, Crosby, Davis, Howie, and Struthers (2000) found advantages to using a case-based learning method with medical students. This approach stimulated clinical reasoning as the students worked to solve clinical scenarios in small groups.

The American Occupational Therapy Association (AOTA) suggests that research is needed to measure the outcomes of specific educational innovations in OT. The AOTA, which will be sponsoring the 2013 Educational Summit, supports the trend to examine educational practice. With an increasing number of students enrolled in OT programs and the trend for larger class sizes, faculty face challenges to examine how clinical competence is established using data to determine teaching effectiveness.

At the authors' university, OT faculty periodically review educational assessment and methodology to determine how best to prepare students. Faculty often require students to engage in long case simulations like the IPPI as part of their clinical examination procedures. This may require the students to role play the entire OT process with patient actors. Often, faculty members may play the role of the client while students conduct an evaluation or intervention. Long case simulations may also include written case scenarios requiring students to work through the clinical reasoning process in regard to the specific case.

This current study examines student performance on both case-based and performance-based examinations in relationship to clinical performance on a full time level II fieldwork. The findings obtained from separate focus group sessions with faculty and students further provide insight into the advantages and disadvantages of the educational assessments and methodology. This study examines two educational assessments used in the OT curriculum: the long written case study

The authors describe the effectiveness of each examination as it relates to student performance in clinical practice as measured by the Fieldwork Performance Evaluation (FWPE).

The purpose of this mixed methods study is to determine the effectiveness of case-based and performance-based examinations to measure student preparation for practice. The authors examined the following hypotheses:

1. There will be a positive correlation between OSCE scores and IPPI scores.
2. There will be a positive correlation between OSCE scores and FWPE scores.
3. There will be a positive correlation between IPPI scores and FWPE scores.

The authors also addressed the following research question:

What are the advantages and disadvantages to different clinical examination formats from both a student and faculty perspective?

Method

The University of New England Institutional Review Board approved the use of human subjects for this study. The authors obtained informed consent for participation in the focus groups and reminded the participants that they could refuse to answer questions at any time and that the sessions would be confidential.

Participants

The quantitative data were obtained from a sample of convenience consisting of the entire graduate OT class of 2013 (n = 45). This class consisted of 41 women and four men between 21

and 34 years of age enrolled in the first year of an OT graduate program.

All students from this group were invited to participate in the focus group session after successful completion of level II clinical practicum. Seven female students volunteered to participate in a 30-min focus group discussion. All OT faculty (n = 7) participated in a separate 30-min focus group session.

Measurements

The authors analyzed scores on completed classroom work, including a case-based examination (IPPI), a practical examination (OSCE), and the Fieldwork Performance Evaluation (FWPE).

Integrated Performance Procedural Instrument (IPPI). The IPPI included an exam using the written case study format completed in one 2-hr class session. The examination was designed to examine students' clinical reasoning for OT practice. Students were provided with a short case example and responded to questions based on this example. The questions followed a similar format for reasoning that a clinician may use to guide his or her clinical thinking when in practice and one that has been supported by the OT literature (Kielhofner, 2008; Mahaffey, 2009; O'Brien et al., 2010). Students were required to describe why they made specific decisions. All students were enrolled in a class that used case-based learning methods. The instructor (first author) established a grading rubric and completed all of the grading as part of the course. The IPPI exam was rated using scores out of 100.

Objective Structured Clinical Examination (OSCE). The OSCE included scores on short clinical performance assessments requiring students to demonstrate clinical skills at the end of a laboratory class. Each OSCE was graded based on a 5-point rating scale. A total OSCE score was calculated based on 10 assessments that represented performance skills. The OSCEs required that the students demonstrate skills, such as range of motion, manual muscle testing, activities of daily living (ADL) training, motor control or motor learning principles, transfer techniques, visual perceptual evaluation methods, and splinting. The instructor developed the rubrics for each assignment and scored each student. Total scores were multiplied by two to give a score out of 100.

Fieldwork Performance Evaluation (FWPE). The FWPE was developed by the AOTA (2004) to measure entry-level competence of the OT student. It is intended to provide the student with an accurate assessment of his or her competence for entry-level practice. The supervisor rates the student on 42 performance items on a scale of 1 (unsatisfactory) to 4 (exceeds standards). Scores ranging from 42 to 168 are possible. The reliability of this measure has not been established, although it continues to be used as the measure of level II fieldwork competence nationwide. AOTA recommends that each site develop objective criteria for the items. This study used the FWPE scores from the first level II clinical fieldwork experience.

Procedures

Students enrolled in the second semester of a first year graduate OT program completed examinations as part of two required courses

regarding the physical functioning and rehabilitation of adults. One course used a case-based method of instruction, in which students engaged in work related to specific cases. The other course was a laboratory course that focused on helping students develop skills to work with adults who have physical deficits.

Student scores on the case-based and performance-based examinations were collected upon completion of the courses. Additionally, students' final scores on the FWPE were collected upon completion of their level II fieldwork experiences. After compiling the data, students' names were erased and the data were analyzed.

Upon return to campus after completing their clinical experience, students were invited to participate in a focus group to discuss assessments, methodologies, and preparation for fieldwork. Faculty were invited to participate in a separate focus group session to discuss educational assessments and methodologies to prepare students better for clinical practice. The following questions were used to guide the focus groups.

Faculty Group

1. Describe your experience with the short competency-based examination.
2. Describe your experience with the case-based examination.
 - How often do you give these types of exams?
 - What are the advantages/disadvantages of this type of exam?
 - How does it prepare students for practice?

- Why would you choose this type of exam?
- In what classes do you find it helpful?
- Why would you avoid using this type of exam?

Student Group

1. Describe your experience with the short competency-based examination.
2. Describe your experience with the case-based examination.
 - How well did you do on these types of exams?
 - What are the advantages/disadvantages of this type of exam?
 - How did it prepare you for clinical practice?
 - Which type of exam did you prefer? Why?
 - Which type of exam prepared you best for practice?
 - How would you suggest faculty test student's knowledge for clinical practice?

Data Analysis

The authors conducted a Pearson correlation to examine how each assessment method correlated with FWPE scores. The authors, who were present at each focus group, reviewed the audiotapes to separately identify themes. Together consensus was reached on the themes that adequately defined the content and trends regarding educational methodologies.

Results

Students' scores on clinical performance measure (OSCE) ranged from 88 to 101 ($x = 96$, $SD = 3.13$). The case-based examination (IPPI) scores ranged from 64 to 100 ($x = 88$, $SD = 7.18$). Final FWPE scores ranged from 122 to 168 ($x = 138$, $SD = 10.69$).

Table 1 describes the results of Pearson correlations among OSCE, IPPI, and FWPE. No significant correlations were found between the OSCE scores and IPPI scores or clinical placement FWPE scores. A significant correlation was found between the IPPI scores and final clinical placement FWPE scores.

Table 1

The Correlation Between Performance-based (OSCE) and Case-based (IPPI) Learning Methods With Final Fieldwork Scores (FWPE)

	IPPI	FWPE
OSCE	$r = -.046, p = .381$	$r = .008, p = .479$
IPPI		$r = .275, p = .034^*$

* Correlation significant at the 0.05 level (1-tailed)

Focus Group Analysis

Faculty group themes. The faculty focus group revealed themes related to the use of assessments and methodologies in education. Overall, faculty clearly verified the advantages of using both examination procedures. They acknowledged that case-based written examinations allowed students to show their clinical reasoning and apply concepts to practice. However, this

did not allow the students to demonstrate “thinking on their feet” and clinical competency. Faculty viewed the short clinical competency examination as a sufficient technique to provide students with the motivation to learn demonstrative skills and perform under stressful situations. Faculty agreed that the stress of “being tested” was beneficial in helping the students prepare. Faculty discussed the need for “clear and structured rubrics that allowed for detailed feedback” in each examination. Further discussion on the importance of allowing the students to “reflect on their competency” was supported by the faculty. Faculty further agreed that while self-reflection was important, students should also learn to receive critique from evaluators. This was cited as an area that has become increasingly difficult and viewed by the faculty group as perhaps a ‘generational’ learning factor.

Faculty noted that it would be beneficial to include a comprehensive competency examination, such as a long OSCE, prior to the level II fieldwork experience. While the short competency checks in the laboratory classes provide students with experiential learning, faculty viewed seeing the student clinically reason and perform through cases as beneficial in better preparing student to enter fieldwork. Much discussion ensued concerning the timing and progression required to prepare the students for this. Faculty agreed that a combination of the performance-based and case-based written examination would provide a thorough picture of the student’s abilities and help prepare the student for practice.

Student group themes. The student group acknowledged the value of both types of examinations and remarked that the case-base examinations helped them articulate their clinical reasoning. They found the case examples helpful, but they wished they had more experience “sifting through actual client data” in class. While some students in the group thought the cases in class should have presented more data, others felt the material was well suited to their level and built upon each of the assignments.

The theme of “case simulations closer to clinical practice” came up throughout the discussion. Students all commented they wanted “more hands-on examinations.” They stated the competency examinations in class were helpful, but they wanted more of them along with more specific feedback on what they could improve. Many students described how clinical practice differed from the competency-based examinations because clients changed or responded differently from student actors. The students suggested more experience in class with “difficult patients” to help prepare them for practice. They felt like more practice “thinking on their feet” would benefit them in clinical practice.

The students believed that the competency examinations in class helped them focus during the laboratory times. Students preferred knowing the exact clinical skills that they needed to demonstrate by the end of the class session. They remarked that even more structure may benefit the laboratory courses. They liked working through cases using clinical reasoning techniques but wanted more

practice in adapting and changing approaches quickly for use in practice.

Discussion

The case-based format of teaching and examination was used to promote clinical reasoning and problem solving to simulate clinical practice. OT students see the value of the method. Students reported that the course methodology is valuable for future practice. Faculty find that using cases provides an interesting arena to discuss and learn about the dynamic nature of OT practice. This format encourages students to explore aspects of cases that they deem important. The faculty member’s challenge when using this approach is to develop focused cases to facilitate learning and to encourage students to delve more deeply into the topics.

The case-based method allows students to integrate material from other courses into intervention plans. The student focus group valued the client-centered approach that the case-based assessment provided. These findings are also reported among medical students (Harden, et al., 2000; Nestel et al., 2011). This higher level integration should prepare students for future practice. Students returning from fieldwork advised faculty that more difficult cases be used to reflect the uncertainty of clinical work. However, other students acknowledged the logical progression of cases leading to the examination as helpful in establishing their clinical reasoning. When examining teaching methodologies, Harden et al. (2000) recommended that faculty clearly define the learning outcomes and tasks associated with the cases. The data from the current study suggest that

the case-based format correlates with clinical performance for OT students, as scores on the written case examination correlated with final FWPE scores.

The OSCE provides a measure of student performance in a variety of performance-based skills. In this study, students completed short performance-based assessments each week upon conclusion of the laboratory class. This allowed students to practice the performance-based skills and demonstrate clinical competency. These short performance-based assessments served to focus students and allowed them to demonstrate skills required for clinical practice. While the students valued the relationship to practice, the skills were performed separately and not related to a specific client or case. Most of the students scored high on these skills, which may account for the lack of correlation to clinical practice scores. The limited range of scores on the OSCE (88 – 101) may reflect actual performance for basic clinical skills. However, the instructor noted that further refinement and specificity may benefit this assessment procedure and help to make it more predictive of clinical practice abilities. Students confirmed that the performance measures did not always require intense practice or adjustments that may be required in practice. These competency assessments were designed to be performed quickly and may have evaluated global skills. Focus group discussions with faculty and students indicated that the measurements may need to be refined to reflect more subtle performance differences. Faculty also discussed developing more detailed grading rubrics to enhance performance. For example, faculty

suggested that completing performance-based assessments after learning several skills may be a better indicator of clinical performance. Faculty further suggested using this OSCE format based upon a specific case or case scenario. Applying principles from a case to a practical examination may help students integrate knowledge with skill performance which may translate into clinical practice. Students did indicate that the performance-based assessments helped them focus in class and increased the intensity of sessions adequately. Faculty commented that assessment must progress from performance to reflection.

No correlation between the OSCE and IPPI scores was found, suggesting that these two measures examine different constructs. The OSCE is designed to measure skill-based performance whereas the IPPI is designed to evaluate clinical reasoning. Since both performance skills and clinical reasoning are critical for success as an OT practitioner, the findings indicate that both assessment methods are beneficial. Students and faculty both highlighted the positive aspects of each measure. They cited the strengths of the case-based examination as a way to facilitate and measure clinical reasoning. The performance competency examinations helped students gain confidence and skills for practice. Both students and faculty suggested using examination procedures to help students “think and perform on their feet” as one might have to do in clinical practice. Helping students succeed in this type of assessment may provide the best relationship to clinical practice. Multiple studies recognize the benefits of each

method of assessment (Durning et al., 2012; Nestel et al., 2011; Wilkinson et al., 2008).

The findings from this study indicate that clinical performance assessments, such as the OSCE, may need to be more structured to measure adequately subtle differences in performance to enhance student learning. Increasing the sensitivity of evaluation methods so that students do not “ceiling out” may help predict clinical performance. The process of testing may help students prepare for thinking on their feet and addressing a variety of skills. Students commented that although they were nervous and stressed, the practice in a testing situation was beneficial.

The relationship of educational methods and clinical practice suggest that educators may decide to use a variety of assessment methods and to determine the suitability of the method to the content. Requiring students to perform skills and use clinical reasoning in a variety of settings, such as laboratory practicals, simulations, paper cases, and presentations requires faculty work closely as a team. Measuring the effectiveness of teaching methodologies is an ongoing process that benefits students and faculty.

Focus group sessions provided an opportunity for greater clarity regarding the two types of examinations. Faculty frequently used the terms interchangeably and valued both types. This does complicate the authors’ ability to discriminate between the value of each type. Educators may want to evaluate carefully assessment measures that simulate the clinical reasoning process and correlate with clinical performance. It is important that

as to reason critically. Therefore, providing students with opportunities to target both types of performance engages them in novel learning that simulates clinical practice and prepares them for professional work. Miller, Bossers, Polatajko, and Hartley (2001) developed a Competency Based Fieldwork Evaluation (CBFE) that identified seven competencies for rehabilitation professionals: a) practice knowledge; b) clinical reasoning; c) facilitation of change; d) professional interactions; e) communication; f) professional development; and g) performance management. Finding examination methods to assess student performance in these seven competencies may help medical educators comprehensively prepare students for clinical practice.

The case-based assessment was significantly correlated with final fieldwork scores, whereas the performance-based assessments were not. This seems to contradict findings from Durning et al. (2012) who found that teaching format did not indicate success during clinicals in medical students. Further examination of how to develop performance-based assessments that will correlate to clinical practice may benefit educational programs seeking to educate competent practitioners. The FWPE score relies on the subjective ratings from supervisors which brings into question the reliability of this measure. AOTA is currently working on a revised version of this form.

Exploring the assessment procedures and rubrics that are used to observe student performance may prove beneficial. Developing clear assessments that simulate clinical practice

may require faculty to refine rubrics and provide ongoing critical feedback on both performance and critical thinking. Medical educators are encouraged to examine the effectiveness of assessment measures of clinical performance.

There were several limitations to this study. The OSCE examinations included in the current study could have been more sensitive to performance differences. The weekly OSCEs could have been more structured and rigorous. This may help detect changes among students and consequent fieldwork performance. Faculty clarity on the differences between the IPPI and OSCE were not established prior to the study and it is probable that there was overlap in courses. Another noted limitation includes the measure of clinical performance. The reliability of the FWPE has not

been established, despite its national use as an outcome measure.

Conclusion

The findings from this study suggest that a case-based written examination emphasizing clinical reasoning correlates with the clinical performance of OT students. This study suggests that both the OSCE and IPPI formats have value for OT education and that further exploration is necessary. The authors recommend that OT educators carefully review learning outcomes and develop structured and detailed assessment measures. Further evaluation of assessment measures that combine these two approaches may be the best approach to prepare students for fieldwork and clinical practice.

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