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Clinical Decision Making Tool for DPT students

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Abstract

Clinical decision-making and clinical skills are keystones to becoming a competent, autonomously practicing physical therapist. No validated tool exists that specifically measures these skills in physical therapy students. At best, current tools use expert opinion for validation. The purpose of this pilot study was to create a validated measurement tool to assess students' clinical decision-making and clinical skills.

Introduction

Autonomous physical therapy practice, characterized by independent, self-determined, professional judgment and action, is one of the major emphases of the American Physical Therapy Association's (APTA) Vision Statement for the physical therapy profession (American Physical Therapy Association, 2013). Physical therapy programs are challenged to develop graduates who practice as independent, autonomous practitioners, engage in critical inquiry, and possess sound clinical decision-making skills (Deusinger, Crowner, Burlis, & Stith, 2014). Clinical decision-making involves critical thinking and problem solving, is essential in making sound clinical judgments, and is key to effective patient care (Wainwright, Shepard, Harman, & Stephens, 2011). Clinical decision-making is central to the practice of professional autonomy in physical therapy (Higgs & Jones, 2000). Many studies describe the importance clinical decision-making for effective, efficient patient care (Hayward et al., 2013; Higgs & Jones, 2000; Jensen, Gwyer, Shepard, & Hack, 2000; Vogel, Geelhoed, Grice, & Murphy, 2009; Wainwright et al., 2011). Jette et al. (2007) identified clinical skills and clinical decision-making as two of the seven attributes that determine a student's ability to practice at entry-level.

Physical therapy programs prepare graduates to use advanced skills to become autonomous practitioners (Deusinger et al., 2014; Weddle & Sellheim, 2009). The development of clinical decision-making occurs in stages through academic and clinical education. Clinical education is an integral part of physical therapy education and plays a critical role in the development of competent professionals (Jette, Nelson, Palaima, & Wetherbee, 2014; Sass et al., 2011). Portney and Knab (2001) and the APTA's Educational Strategic Plan (2012) emphasized the need to prepare physical therapy graduates with both academic and clinical experiences.

Despite understanding the importance of clinical decision-making and clinical skills in physical therapy practice, no tools exists to measure these constructs. Due to the paucity of tools, this pilot study was designed to develop a tool to specifically assess students' clinical decision-making and clinical skills. This paper serves to describe the survey development process, initial validation procedure, and determine if it is fruitful to continue to use the tool in future studies.

Literature Review

In 2002, the APTA created a task force to develop the Physical Therapist Clinical Performance Instrument (PTCPI), a tool designed to measure all aspects of physical therapy clinical performance (Roach et al., 2002; Roach et al., 2012). Clinical decision-making and clinical skills are themes woven throughout this instrument, but no distinct component germane to these constructs was included.

Nursing educators have developed tools to assess clinical decision-making: the Nursing Performance Simulation Instrument (Gover, 1972), the Clinical Decision Making in Nursing Scale (Jenkins, 1985), and an instrument consisting of 56-items based on decision-making theories (Lauri & Salanterä, 2002). Gover's tool is nursing specific, requires precise simulation scenarios, and contains 126 items, making its use impractical (Edelen, 2011). While also nursing specific, Jenkin's 40-item scale assesses students' perception of their clinical decision-making and is applicable to other disciplines (Jenkins, 1985). The 56-item instrument created by Lauri and Salanterä describe nurses' CDM rather than assess change over time, and is therefore not applicable.

Methods

Study Design and Population

This is a descriptive study using a sample of convenience. This sample included 12 DPT interns from the MGH Institute of Health Professions who completed their yearlong, terminal internship in September 2012, and their 19 clinical instructors (CIs). Many students had multiple clinical instructors, accounting for the disparity in numbers. At the time of the survey, all interns were graduates of the MGH Institute of Health Professions, licensed physical therapists, and in the final stages of completing their internships

Questionnaire Development and Content

The survey tool was created to measure clinical decision-making and clinical skills across all practice settings. The researchers determined that measuring the students' perception of their clinical decision-making and clinical skills rather than the constructs specific to one practice setting would accomplish this goal. The survey was adapted from the PTCPI. The instrument has a ceiling effect, encompasses all domains of physical therapy practice, and there is a lack of consensus on the definition of "entry-level" and "beyond entry-level". These two terms were not used in our survey tool. The survey uses select sample behaviors from components of the PTCPI performance criteria that pertained to clinical decision-making and clinical skills only. Sample behaviors from the following sections were used: safety, clinical reasoning, examination, evaluation, prognosis, plan of care, interventions, reexamination, and outcome assessment. Experts examined the sample behaviors for content validity during the validation process (Roach et al., 2002).

A rating scale was created to avoid the ceiling effect. Participants ranked their level of agreement with each survey item on a 6-point Likert scale. For data analysis, each response category was assigned a value, 6 =strongly agree to 1=strongly disagree. To assess content validity, a draft of the survey was distributed to several faculty, physical therapists involved in clinical education, and clinical instructors. Constructive changes were made based on their feedback. Two identical, 25 question surveys were developed: one survey for the supervising Clinical Instructor (CI) of each identified intern and one for the intern. Clinical instructors were included to assist in validating the interns' perception of their clinical performance.

The Spaulding Rehabilitation Hospital Institutional Review Board, the approving board for MGH Institute of Health Professions, authorized the study.

Dissemination of the survey

The survey was disseminated via email on Survey Monkey to all participants. The email contained a cover letter describing the aims of the research and a link to the survey. By completing and returning the survey, participants implied consent. Survey collection spanned four weeks, with reminder emails sent at the end of the first and third weeks. In order to compare the level of agreement between the clinical instructor and intern, the intern's responses were matched with their respective CI's responses. To protect the privacy of the participants and blind the faculty investigators, a graduate student matched the intern with their CI(s), when applicable, and coded the data.

Data Analysis

All data was analyzed using IBM SPSS Statistics, version 21 (IBM, 2012). The Likert scale was converted to an ordinal scale for assessment, and the data treated as non-parametric. Descriptive statistics were used for general survey information. For each question, frequency distributions, means with standard deviations, and medians were computed. The aggregate responses of the CIs and interns were compared using a Mann Whitney U Test ($p=.05$). A Wilcoxon signed-ranks test was performed ($p=.05$) to compare the responses of the matched pairs of interns and CIs.

Results

Thirteen CIs and 7 interns completed the survey, yielding a 72.22 percent and 53.84 percent response rate respectively. Of the clinicians who responded to the survey, 84 percent of the CIs and 100 percent of the interns were female. The participants worked in a variety of practice settings (see Table 1).

Table 1: Type of practice settings

	Practice setting	No. of Clinical Instructor(n=13)	No. of Interns (n=7)
1	Acute rehab	3	1
2	Outpatient	5	5
3	Long term acute care	2	1
4	Acute care hospital	3	0

Minimal variability existed in the frequency distributions, rating averages, and medians of the responses by the interns and CIs respectively for each item on the survey. For the interns, there were no responses in the “disagree”, “somewhat disagree” and “strongly disagree” categories. The median and average responses were between 5, “somewhat agree”, and 6, “strongly agree”. Likewise for the clinical instructors, the “somewhat disagree” and “strongly disagree” sections contained no responses. The average responses fell between 5.08 and 5.85, and the medians between 5 and 6.

Due to the small sample in this pilot study, the responses for the CIs and interns were aggregated respectively to gather a general sense of the CI's perceptions compared to those of the intern. A Mann Whitney U Test was used to compare the aggregated responses between the two groups for each question. None of the values showed a statistically significant difference when comparing the clinical instructors' response to that of the interns.

To compare the differences in perceptions of the clinical instructors and that of the interns about the interns' skills, we matched the responses of the interns to their corresponding CIs. Of the interns and CIs who responded, five pairs matched. Overall, the interns and CIs agreed 37.6 percent of the time, the interns rated themselves higher 27.2 percent of the time, and the clinical instructor rated the intern higher 35.2 percent of the time.

The results of the Wilcoxon signed rank test showed a significant difference between the perceptions of four pairs of CI's and their interns (see Table 2). The negative responses indicate that the interns scored themselves higher than the CI. The positive responses indicate that the CI rated the intern higher than the intern did. Ties represent agreement between the intern and CI on the item.

Table 2: Results of the Wilcoxon Signed Rank Test

	p-value	Negative Response	Positive response	Ties
CI1-Intern1	0.000*	1	18	6
CI2-Intern2	0.000*	20	0	5
CI3-Intern3	0.046*	4	12	9
CI4-Intern4	0.002*	1	11	13
CI5-Intern5	0.507	8	3	14

Discussion

The purpose of this pilot study was to create a survey to measure students' clinical decision-making and clinical skills. The survey assessed the perception of both the interns and instructors of the interns' clinical decision-making and clinical skills at the end of a yearlong internship. The response rate of the survey was above the average response rate for academic studies (Baruch, 1999). Due to greater professional responsibilities, we anticipated a lower response rate from the CIs compared to the interns. The lower response rate from the interns may be due to time constraints or life transitions as their internship ends (Miller & Dumford, 2014).

The average rating score above five for both interns and CI suggests that the perceptions of CIs and interns on the scales was good. High ratings are expected since the interns successfully completed all required coursework, clinical education experiences, and passed board examinations prior to survey completion (Jensen & Mostrom, 2013). High ratings support the findings of Portney and Knab (2001) that the DPT program is preparing the students well for clinical practice. While the results are very encouraging, they should be interpreted with caution given the small sample size. The results warrant a larger study to attempt to discern the contributing factors, to assess if the scales are measuring clinical decision-making and clinical skills, and to evaluate the sensitivity of the scale.

Ideally, perceptions of interns and CIs would be identical when rating a students' performance (Zell & Krizan, 2014). The study sample showed that only 37.6 percent of the responses matched. Considering students often underrate their performance, the results were not surprising that in three of four statistically significant matched pairs, the interns rated themselves lower than their instructors. Interns are new clinicians and are not as confident in their skills. Boud and Falchikov (1989) found that students aware of their deficiencies tend to underrate themselves. Gordon (1991) reported that health professions students' self-assessment scores correlated moderately with objective measures or instructor scores.

The results of the other matched pair in our study displayed that the intern rated herself higher than the CI on 20 of the 25 items. Boud and Falchikov (1989) established that weaker and less mature students tend to overrate themselves. Davis et al. (2006) corroborated this finding with their study where the least skilled, yet most confident students, demonstrated the weakest self-assessment skills. An overconfident student often possesses a lack of awareness of their deficits (Richardson, Abraham, & Bond, 2012). In a clinical situation, a student who is unable to self-assess accurately is potentially at risk for compromising their own or a patient's safety (Davis et al., 2006). The intern who overrated herself skewed the data because in 80 percent of the responses where the intern rated themselves higher than their instructor were provided by this intern. Considering the remaining four pairs, the CI and intern agreed 42 percent of the time, the CI rated the intern higher 44 percent of the time, and the intern rated themselves higher only 14 percent of the time. This data is more consistent with the available research (Falchikov & Boud, 1989; Richardson et al., 2012).

Limitations and Suggestions for Future Research

The biggest limitation of this pilot study is the small sample size. Our sample was one of convenience consisting of a small number of interns and clinical instructors and cannot be generalized to all physical

therapy graduates. Future research studies should involve a larger sample that is indicative of the demographics of this group.

Content validity of the survey tool was established by expert opinion. The survey tool needs further investigation with a larger sample size in order to determine the construct validity and internal consistency. In addition, constructs need to be identified within the survey to gather more information on each content area. Triangulation of the data with focus groups or narrative responses would help validate the results. No validated survey that assesses clinical decision-making and clinical skills exists, so comparison to surveys with similar constructs may be beneficial. The sensitivity of the Likert scale should be examined and collapsing into fewer categories explored.

Conclusion

Despite the small sample size, there are indications from the data that this tool warrants further study. The tool demonstrates differences that appear consistent with the evidence on students' perceptions of their abilities compared with instructors. Additionally, the students' performance with respect to clinical decision-making and clinical skills is consistent with what would be expected at the culmination of their internship. However further validation that this tool is assessing these constructs is necessary.

References

- American Physical Therapy Association. (2013). Proposed vision and vision elements. Retrieved from <http://www.apta.org/BeyondVision2020/>
- American Physical Therapy Association Board of Directors. (2012). APTA education strategic plan. Retrieved from http://www.apta.org/uploadedFiles/APTAorg/About_Us/Policies/APTA_Adopted_Plans/APTAEducationStrategicPlan.pdf#search=%22APTA%20Educational%20Strategic%20Plan%22;
- Baruch, Y. (1999). Response rate in academic studies--a comparative analysis. *Human Relations, 52*(4), 421-438.
- Davis, D. A., Mazmanian, P. E., Fordis, M., Van Harrison, R. R., Thorpe, K. E., & Perrier, L. (2006). Accuracy of physician self-assessment compared with observed measures of competence: A systematic review. *JAMA, 296*(9), 1094-1102.
- Deusinger, S. S., Crouner, B., Burlis, T., & Stith, J. (2014). Meeting contemporary expectations for physical therapists: Imperatives, challenges, and proposed solutions for professional education. *Journal of Physical Therapy Education, 28*(1b), 56-61.
- Edelen, B. G. (2011). Measuring and enhancing clinical decision-making ability among students in an associate degree nursing program. Ann Arbor, MI: ProQuest, UMI Dissertation Publishing.
- Falchikov, N., & Boud, D. (1989). Student self-assessment in higher education: A meta-analysis. *Review of Educational Research, 59*(4), 395-430.
- Gordon, M. J. (1991). A review of the validity and accuracy of self-assessments in health professions training. *Acad Med, 66*(12), 762.
- Gover, V. F. (1972). The NPSI: A nursing performance simulation instrument. *Nursing Research Conference, 8*, 9-44.
- Hayward, L. M., Black, L. L., Mostrom, E., Jensen, G. M., Ritzline, P. D., & Perkins, J. (2013). The first two years of practice: A longitudinal perspective on the learning and professional development of promising novice physical therapists. *Physical Therapy, 93*(3), 369-83.
- Higgs, J., & Jones, M. (Eds.). (2000). *Clinical reasoning in the health professions* (2nd ed.). Boston, MA: Elsevier Health Sciences.
- IBM. (2012). *SPSS statistics [computer program]* (21st ed.). Armonk, NY: IBM Corporation.
- Jenkins, H. M. (1985). A research tool for measuring perceptions of clinical decision making. *Journal of Professional Nursing, 1*(4), 221-229.
- Jensen, G. M., & Mostrom, E. (2013). *Handbook of teaching and learning for physical therapists* (3rd ed.). St. Louis, MO: Elsevier/Butterworth Heinemann.
- Jensen, G. M., Gwyer, J., Shepard, K. F., & Hack, L. M. (2000). Expert practice in physical therapy. *Physical Therapy, 80*(1), 28-43; discussion 44-52.
- Jette, D. U., Bertoni, A., Coots, R., Johnson, H., McLaughlin, C., & Weisbach, C. (2007). Clinical instructors' perceptions of behaviors that comprise entry-level clinical performance in physical therapist students: A qualitative study. *Physical Therapy, 87*(7), 833-843.

- Jette, D. U., Nelson, L., Palaima, M., & Wetherbee, E. (2014). How do we improve quality in clinical education? Examination of structures, processes, and outcomes. *Journal of Physical Therapy Education*, 28(1b), 6-12.
- Lauri, S., & Salanterä, S. (2002). Developing an instrument to measure and describe clinical decision making in different nursing fields. *Journal of Professional Nursing*, 18(2), 93-100.
- Miller, A., & Dumford, A. (2014). Open-ended survey questions: Item nonresponse nightmare or qualitative data dream? *Survey Practice*, 7(5), 1-11.
- Portney, L., & Knab, M. (2001). Implementation of a 1 year paid internship in physical therapy. *Journal of Physical Therapy Education*, 15(4), 31-35.
- Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin*, 138(2), 353-387.
- Roach, K. E., Frost, J. S., Francis, N. J., Giles, S., Nordrum, J. T., & Delitto, A. (2012). Validation of the revised physical therapist clinical performance instrument (PT CPI): Version 2006. *Physical Therapy*, 92(3), 416-428. doi:10.2522/ptj.20110129 [doi]
- Roach, K. E., Gandy, J., Deusinger, S. S., Clark, S., Gramet, P., Gresham, B., . . . Rainey, Y. (2002). The development and testing of APTA clinical performance instruments. American Physical Therapy Association. *Physical Therapy*, 82(4), 329-353.
- Sass, K., Frank, L., Thiele, A., Newton, A., Bork, B., Hartung, S., & Rosenbaum, M. (2011). Physical therapy clinical educators' perspectives on students achieving entry-level clinical performance. *Journal of Physical Therapy Education*, 25(3), 46-52.
- Vogel, K. A., Geelhoed, M., Grice, K. O., & Murphy, D. (2009). Do occupational therapy and physical therapy curricula teach critical thinking skills? *Journal of Allied Health*, 38(3), 152-157.
- Wainwright, S. F., Shepard, K. F., Harman, L. B., & Stephens, J. (2011). Factors that influence the clinical decision making of novice and experienced physical therapists. *Physical Therapy*, 91(1), 87-101.
- Weddle, M. L., & Sellheim, D. (2009). An integrative curriculum model preparing physical therapists for vision 2020 practice. *Journal of Physical Therapy Education*, 23(1), 12-21.
- Zell, E., & Krizan, Z. (2014). Do people have insight into their abilities? A metasynthesis. *Perspectives on Psychological Science*, 9(2), 111-125.