



Original article

Sensibility of a new instrument to assess clinical reasoning in post-graduate orthopaedic manual physical therapy education

Euson Yeung^{a, b, *}, Nicole Woods^b, Adam Dubrowski^c, Brian Hodges^{d, e, f}, Heather Carnahan^g^a Graduate Department of Rehabilitation Sciences, University of Toronto, Canada^b The Wilson Centre for Research in Education, University Health Network, Toronto, Canada^c Division of Emergency Medicine, Memorial University of Newfoundland, St John's, Canada^d Faculty of Medicine, University of Toronto, Canada^e Vice-President Education, University Health Network, Canada^f Wilson Centre for Research in Education Richard and Elizabeth Currie Chair in Health Professions Education Research, Toronto, Canada^g School of Human Kinetics and Recreation, Memorial University of Newfoundland, St John's, Canada

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ABSTRACT

Sound application of clinical reasoning (CR) by the physical therapist is critical to achieving optimal patient outcomes. As such, it is important for institutions granting certification in orthopaedic manual physical therapy (OMPT) to ensure that the assessment of CR is sufficiently robust. At present, the dearth of validated instruments to assess CR in OMPT presents a serious challenge to certifying institutions. Moreover, the lack of documentation of the development process for instruments that measure CR pose additional challenges.

The purpose of this study is to evaluate the sensibility of a newly developed instrument for assessing written responses to a test of CR in OMPT; a 'pilot' phase that examines instrument feasibility and acceptability.

Using a sequential mixed-methods approach, Canadian OMPT examiners were recruited to first review and use the instrument. Participants completed a sensibility questionnaire followed by semi-structured interviews, the latter of which were used to elaborate on questionnaire responses regarding feasibility and acceptability.

Eleven examiners completed the questionnaire and interviews. Questionnaire results met previously established sensibility criteria, while interview data revealed participants' (dis)comfort with exerting their own judgment and with the rating scale. Quantitative and qualitative data provided valuable insight regarding content validity and issues related to efficiency in assessing CR competence; all of which will ultimately inform further psychometric testing.

While results suggest that the new instrument for assessing clinical reasoning in the Canadian certification context is sensible, future research should explore how rater judgment can be utilized effectively and the mental workload associated with appraising clinical reasoning.

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1. Introduction

There continues to be a plethora of research studies conducted within the field of orthopaedic manual physical therapy (OMPT) aimed at improving outcomes of patients with musculoskeletal dysfunctions. Despite these efforts, optimal patient outcomes

remain difficult to achieve without adequate clinical reasoning by the practitioner (Jull, 2009). Given the foundational role that clinical reasoning competencies play in OMPT education and practice (Jones and Rivett, 2004; Rushton and Lindsay, 2010), it is imperative for certifying institutions including universities and professional associations to ensure that clinical reasoning assessment is sufficiently robust. Rigorously developed assessment methods are particularly important in the post-graduate context since results from high-stakes certification examinations may have significant implications on candidates' future employment, career and remuneration (Hutchinson et al., 2002; Ricketts, 2009).

* Corresponding author. 160-500 University Avenue, Toronto, Ontario, M5G 1V7, Canada.

E-mail address: euson.yeung@utoronto.ca (E. Yeung).

Clinical reasoning refers to “the process in which the therapist, interacting with the patient and others, helps patients to structure meaning, goals, and health management strategies based on clinical data, patient choices, and professional judgment and knowledge.” (Higgs and Jones, 2000, p3). Over the last several decades, assessment of clinical reasoning in a valid manner has been identified as one of the more challenging feats in health professions education (Kreiter and Bergus, 2009; Durning et al., 2013). This is largely owing to the inherently complex nature of clinical reasoning and the lack of a single well delineated reasoning path for any given clinical problem (Durning et al., 2013). Accordingly, measures of clinical reasoning competence must reflect these characteristics. Although such instruments are critical to the validity of the scores derived from clinical reasoning assessment, they are seriously lacking in the post-graduate OMPT context, particularly for the purposes of certification.

In order to address this gap, a new instrument, named the Case History Assessment Tool (CHAT), was developed to standardize the assessment of written responses to a short answer test of clinical reasoning in the Canadian OMPT certification process (Appendix A). This assessment rubric is comprised of 45 assessment items and 4 global rating statements, and was constructed based on an OMPT-specific clinical reasoning assessment framework (Yeung et al., 2013). To date, the validity of the assessment results derived from this instrument remains to be established.

Validity refers to the extent to which scores generated from an instrument are justifiable, relevant and meaningful for a specific purpose (Cook and Beckman, 2006; Schuwirth and van der Vleuten 2012; 46:38–48). Contemporary theorists conceive validity as a unitary concept that depends on a coherent chain of evidence or inferences that collectively indicate the trustworthiness of assessment results (Kane 2001, Downing 2003). Theories of validity describe five distinct sources of evidence with which to formulate and test such inferences: instrument content; response process; the instrument's internal structure; relationships between assessment scores and other variables; and the consequences of decisions made based on the assessment results of interest (Table 1) (Messick 1995).

Evidence from the ‘response process’ refers to quality control measures taken to control for sources of error associated with test administration (Downing 2003). For short answer tests that rely on examiners' appraisal of written responses, examining the sensibility of the assessment instrument is critical to generating such evidence of validity. Based on a review of relevant frameworks (Feinstein, 1987; van der Vleuten, 1996; Auger et al., 2006; Cook et al., 2014; Haji et al., 2014), sensibility assessment is the ‘pilot’ phase of instrument development whereby key data are accumulated regarding the instrument's feasibility in a specified assessment context as well as its acceptability to the intended users. In the absence of sensibility assessments, even instruments that have undergone rigorous development and testing may be unacceptable

to intended users and thus never utilized (Rowe and Oxman, 1993). Hence, sensibility testing is a critical step that precedes reliability testing, and is essential for ensuring its future adoption in practice (Rowe and Oxman, 1993; Crossley et al., 2002; O'Brien et al., 2013; Tang et al., 2013).

The feasibility of an instrument pertains to its efficiency in achieving the purpose of the assessment (Table 2). Without endorsement of feasibility by potential users, undetected inefficiencies related to the practicalities of implementing a new instrument may threaten its usability (Bowen et al., 2009). Unnecessary burden placed on the user resulting from inappropriate instrument format, length and clarity, as well as undue administrative burden demanding excessive time and training may render the instrument impractical and unusable (Bowen et al., 2009). Since the accuracy of inferences made by raters about candidates' competence hinges on the efficiency with which raters observe and appraise examinees' performance (Tavares and Eva, 2013), extraneous mental effort resulting from issues of feasibility must also be identified and subsequently minimized.

Acceptability is the extent to which potential users endorse the instrument content and the interpretation of associated assessment results (Table 2). Without adequate appraisal of the acceptability of instrument content and subsequent interpretation of assessment results, the construct being assessed may be over or under-represented (Auger et al., 2006). For example, the scoring method (scale) must be satisfactorily aligned with the instrument's purpose and reflect the nature of the construct of interest and the context in which the instrument will eventually be used (Hunter et al., 1996; Eva and Hodges, 2012). For clinical reasoning, a delicate balance must be struck between holistic scoring methods in which the entire test is judged by a single overall mark, and analytical scoring methods, whereby many discrete assessment items contribute individually to an overall mark (Hunter et al., 1996). Achieving this balance through a study of sensibility will ultimately reduce the risk of assessment items being excessively isolated and atomized, thus protecting the entire assessment process from being undermined or trivialized by those seeking certification and those using the instrument (van der Vleuten and Schuwirth, 2005).

The aim of this study was to examine the sensibility of the CHAT for assessing a written test of clinical reasoning in OMPT in order to generate validity evidence for the response process associated with this instrument. Moreover, this study aimed to clarify uncertainties regarding the instrument's efficiency, content and design (Yeung et al., 2013).

2. Methods

As previously mentioned, a total of 45 assessment items were developed and subsequently assigned to the 16 questions in the

Table 1
Sources of validity evidence (adapted from Messick 1989, Cook and Beckman 2006 and Andreatta and Gruppen 2009).

Source of validity evidence	Description of validity evidence	Method of generating validity evidence for the case history assessment tool
1. Instrument content	Extent to which instrument content is relevant to the construct of interest	Developing a blueprint for clinical reasoning in OMPT
2. Response process	Extent to which the cognitive and physical processes required by the instrument can represent the construct of interest	Examining feasibility of scoring procedure
3. Instrument's internal structure	Extent to which the transformation of assessment results into a score reflects the underlying construct	Calculating internal consistency Establishing inter-rater reliability Conducting factor analysis
4. Relationships between assessment scores and other variables	Extent to which assessment results relate with other variables that possess a predicted association with the construct of interest	Examining correlation with other clinical reasoning measures
5. Consequences of decisions made based on assessment results	Evidence pertaining to intended and unintended consequences of interpreting and using assessment results	Establishing and examining method of determining pass/fail on case history examination

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