

Is Clinical Competence Context Specific? An Exploration of Mental Health, Pediatric, and Rehabilitative Clinical Practice Settings

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Abstract

Background: Health care professional students gain clinical experiences and competencies through placements in a variety of settings. There is currently a paucity of evidence regarding the impact of practice areas on student competence and whether different practice settings potentially require specific skill sets to prepare students professionally. The purpose of the study was to examine whether clinical competency differs across practice settings with a maturational effect over time.

Methods: Fifty-two third year graduate occupational therapy students enrolled in a three year program completed three 10 - 12 week full-time clinical placements across a six month period in mental health (MH), physical disabilities (PD) and pediatrics (PED). Performance was assessed using the Fieldwork Performance Evaluation (FWPE).

Results: Student clinical competencies differed across practice setting areas. Students in the MH rotation scored the highest based on final total clinical scores (FWPE) regardless of rotation sequence. However, there was no maturation effect across the three practice area rotations over time.

Conclusions: The present study found differences in clinical performance were influenced based on practice areas and not maturation. Future research is needed to determine whether placement type, or context specific skills exist, and if potential adjustments should be made in curricula to assist students by increasing necessary clinical competencies for specific practice areas.

Keywords: Clinical Competency; Education; Practice Setting

Introduction

Extensive clinical experiences represent the core of any health care profession's curriculum and serve as the essential bridge from classroom to clinical practice setting. Typically, in allied health education, clinical performance makes up a quarter to a third of the curriculum completed as a sequence of rotations across separate practice settings [1]. Student interns are exposed to a range of practice settings throughout their clinical education, which enable them to learn and integrate theory with practice toward a demonstration and acquisition of professional and personal skills [2,3]. While some studies indicate that practice settings in clinical training do not require context specific skill set awareness, others demonstrate that specific practice settings do require skill set development as an essential component of professional readiness [4-7]. An examination of competence across practice settings should provide insight into site-specific performance, as well as the capacity to adapt to change, to conduct research, to generate new knowledge, and to improve overall performance [1]. Knowledge based on practice settings is crucial to ensure future students obtain necessary competencies as entry-level professionals [8,9].

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Competence in health care clinical education

Professional competence stems from a multitude of learning experiences and settings that provide unique context specific knowledge and skills [3,8,10]. These include the use of knowledge, technical skills, clinical reasoning, pattern recognition, and problem solving abilities [1,10,11]. For example, a clinician needs to be able to carefully observe (pattern recognition) and reflect of what certain behavior may mean (clinical reasoning) then decide what may be the best approach for intervention (clinical reasoning and problem solving skills). The notion that these competencies mature along a developmental continuum as students' progress from novice to expert is accepted by most allied health education programs [12-15]. Acquisition and mastery of competency over time is dependent upon the integration and application of prior knowledge and skills [9]. Generally, the novice students' practice skills become more complex as knowledge and experience increases [15]. As students' progress through their clinical experiences they are expected to be less reliant on supervisory support while taking additional responsibility for self-learning, generating independent critical thinking, reflection, and problem-solving [16].

Several studies indicate that clinical competence exists along a continuum and increases with experience over each subsequent clinical experience. Holmes, *et al.* [8] as well as other studies have demonstrated clinical scores increased over time with each consecutive rotation [12]. Studies of student professional development and clinical reasoning development showed that students in MH settings exhibited increased overall performance throughout this practice rotation [16,17]. Derdall, *et al.* [18] found that students' perception of their clinical competency progressed throughout their various clinical experiences over time.

Others studies view competence as developmental with progress contingent upon deliberate practice and reflection on experience [8,10,14,19]. Richard [20] and Derdall, *et al.* [18] found that student performance during consecutive rotations over time was not perceived or reported by supervisors or students to influence maturation of skill development. Measuring consistency of performance presents particular challenges due to changing supervisors, varied rotation sequences, and the engagement of diverse skill sets [3-7].

Competence based on practice setting

Most studies examined clinical competence in isolation, ignoring the integrated skills and resources students utilize that could provide a broader understanding of performance [3,6,7,21]. Competence can be regarded as contextual [22], reflecting the relationship between the abilities and tasks required to perform in a particular situation [1,11]. Common contextual factors include types of practice setting and the presenting symptoms of patients [1]. Respective clinical settings may elicit or demand specific skill-sets that differ across practice areas. For example, high intensity clinical contexts may require a student, as well as a clinician, be able recognize patterns quickly, interpret, and apply clinical reasoning when considering course of actions for a clinical case. Therefore, performance cannot be prescribed in such a way as to suggest that professionals will act in the same way in a given situation, as it should not be assumed that a student who can work competently with children will work competently with adults [4,23].

Certain aspects of competence, such as history taking and clinical reasoning are context-specific and may not be generalizable to all clinical situations [5,7]. For example, a student's clinical reasoning may appear to be competent in one area of practice demonstrating an ability to apply his or her base of knowledge, but may be less able to perform competently using this same base of knowledge within another setting. Ward [17] discussed the possible differences in rotation scores based on students' ability to apply clinical reasoning competencies in physical rehabilitation practice settings vs. mental health sites. The use of procedural reasoning occurred more frequently in the physical disability settings, whereas interactive reasoning skills occurred more frequently in mental health practice settings. Wimmers, *et al.* [24] found that the primary factor that impacted student competency development was the repetition of site-specific learning experiences.

Thus far, studies of clinical training within allied health disciplines have not fully explored whether students perform differently in different practice settings [25-27]. At the present time, little evidence exists regarding whether competency differs across clinical settings, or if students' clinical competence and success develops along a continuum over time [3,8,28]. Therefore, this study aimed to contribute to the health care educational research knowledge base regarding clinical performance across rotations within different placement types and contexts. The purpose of this study was to explore whether students' performance differed across practice area types, and to investigate whether there was maturation of competency over time.

Methods

Research Design

The current study used a quantitative, non-experimental, cross-sectional design to investigate possible differences in fieldwork scores by practice area/ rotation type in an occupational therapy graduate program. A sample of convenience was utilized without any randomization as part of the methodology. The University's Institutional Review Board approved the research protocol as exempt status using archived data.

Participants

Data was collected on 52 students who were enrolled in a full-time occupational therapy graduate program from 2013 - 2016. Age ranged from 19 - 42 years old from culturally diverse ethnic, socio-economic and educational backgrounds, job-levels and experience backgrounds. Student clinical supervisors (N = 156) provided consent as participants in this study. Student's respective clinical supervisors were from various practice settings in the greater New York Metropolitan area in the following settings: (a) physical disabilities (PD)- e.g. acute care, rehabilitation centers; and (b) pediatrics (PED)- e.g. school settings, private pediatric clinics (c) mental health (MH)- e.g. inpatient psychiatric units, homeless shelters. On average clinical supervisors had more than 10 years of experience, hence considered experts in their field [15].

Procedures

All students completed three different clinical education placements ranging from 10-12 weeks each during the third and final year of the education program. As part of the standard requirement for all accredited graduate occupational therapy programs, clinical supervisors completed the American Occupational Therapy Association Fieldwork Performance Evaluation (FWPE) [29] for each student upon completion of each of the three clinical experiences using the education program's on-line portal [29]. Each student had a different supervisor for each consecutive clinical rotation. In addition, respective fieldwork supervisors received an informational letter and consent form describing the study. The allied health program's clinical placement educator's allocated assignments using one of the following three sequences based on availability (See table 1).

Instruments

The Fieldwork Performance Evaluation (FWPE) [29]. The FWPE a 42 item four-point Likert response scale that measures overall rating of student clinical performance based on a total of seven sub-scale scores. The FWPE [29] seven sub-scales of clinical experience include: (a) fundamentals of practice- includes adherence to ethical and safety judgment according principle of practice; (b) basic tenets of the profession- addresses the ability to articulate the role and values of the profession; (c) evaluation and screening- includes the ability to use clinical reasoning and problem solving skills to assess client needs based on professional knowledge; (d) intervention-identification of client-centered occupations relevant to goals to implement evidenced based practice including proficiency of technical skills; (e) management of occupational therapy services- managing expectations in complex practice setting for best practice; (f) communication- includes verbal and written professional documentation; and (g) professional behaviors- includes several key components of practice performance such as self-reflective abilities, interpersonal and collaborative skills for client-centered and collegial relationships, and self-management skills.

The FWPE [29] is used in all American occupational therapy programs to evaluate student clinical competency. Its psychometric properties were evaluated using a Rasch Analysis with good reliability to determine level of item difficulty and student response across a variety of practice settings [30]. Grades for clinical performance were assigned by clinical supervisors at the completion of each of their two level II full-time fieldwork experiences.

Data Analysis

All data were entered into Statistical Package for the Social Sciences (SPSS) version 24 [31]. Descriptive statistics were calculated to obtain means, standard deviations, skew and kurtosis as well as frequencies for demographics. The first hypothesis of the possible difference in score by practice area was analyzed using a Multivariate Analysis of Variance (MANOVA). The analysis used rotation types;

MH, PD, and PED as the within subject independent variable and the seven averaged FWPE scores and the clinical total score as the dependent variables. The second hypothesis aimed to investigate the difference in fieldwork scores over time, repeated measures MANOVA was conducted. The analysis used rotation order (1st, 2nd, 3rd) as the within subject independent variable and the seven averaged FWPE subscale- scores and the clinical total score as the dependent variables. In all the aforementioned statistical analyses level of significance was set for .05.

	MH	PD	PED
First placement	38% (19)	26% (13)	36% (18)
Second placement	32% (16)	40% (20)	30% (15)
Third placement	30% (15)	34% (17)	34% (17)

Table 1: Descriptive of students based on order and type of rotation type.

Note: MH: Mental Health rotation; PD: Physical Disability Rotation; PED: Pediatric Rotation.

Results

The first hypothesis examined possible differences in fieldwork scores by rotation type was analyzed using MANOVA. A significant multivariate within-subjects effect was found for rotation type (Pillai’s Trace = 0.516, F [16,184] = 4.00, p < .001). Rotation type explained a significant 25.8% (partial Eta² = .26) of the variance in scores, a large effect size. Follow up univariate tests found that all FWPE sections showed significant differences between rotations except section 7 (Professional Behaviors), which did not show significant differences. Means, standard errors, and post hoc LSD tests are presented in Table 2. In general, the MH rotation showed the highest scores on both individual subscales of the FWPE and total clinical rating. PED and PD rotations tended to have similar scores; except for the Intervention score where PED showed higher scores than PD (See table 2).

Measure	Rotation						F (2,98)	Significantly different pairs (LSD Tests)
	MH		PD		PED			
	Mean	SD	Mean	SD	Mean	SD		
Fundamentals of Practice	3.75	.05	3.42	.06	3.57	.07	7.55 ***	MH > PD
Basic Tenets of Profession	3.60	.07	3.33	.06	3.32	.06	6.73 **	MH > PD
								MH > PED
Evaluation and Screening	3.55	.05	3.19	.04	3.26	.05	18.45 ***	MH > PD
								MH > PED
Interventions	3.65	.05	3.23	.05	3.45	.05	22.20 ***	MH > PED > PD
Management	3.50	.05	3.26	.05	3.34	.049)	6.52**	MH > PD
								MH > PED
Communication	3.56	.06	3.33	.05	3.48	(.058)	4.40*	MH > PD
								PED > PD
Professional Behaviors	3.74	.05	3.58	.05	3.62	(.050)	NS	MH > PD
Total Score	151.86	1.81	139.16	1.72	142.76	1.65	16.17***	MH > PD, MH > PED

Table 2: Differences in FWPE averaged scores by Rotation.

Note: MH: Mental Health Rotation; PD: Physical Disability Rotation; PED: Pediatric Rotation; * p < .05, ** p < .01, *** p < .001.

The second hypothesis investigated differences in fieldwork scores over time utilizing repeated-measures MANOVA. The analysis used rotation order (1st, 2nd, 3rd, see table 1) within subject independent variable and the 7 average FWPE scores and the clinical total score as the dependent variables. There was no significant multivariate within-subjects effect of rotation order (Pillai's Trace = 0.22, $F [16,184] = 1.43$, $p = .13$). Rotation order only explained 11% (partial $\eta^2 = .11$) of the variance in scores, a small to medium effect size. Since the finding was not significant, no follow up univariate tests were conducted. These results show that there was no significant difference in student performance at fieldwork over time.

Discussion

This study examined whether student clinical performance differed by practice area, and whether student clinical competencies developed over time. Study results indicate that students completing MH rotations performed better based on final total clinical scores (FWPE) [29] compared to PD and PED rotations. That MH scores were higher does not indicate whether skills were context specific or would be utilized in other situations and contexts or that high performing students in MH scored high across other practice settings [4,23]. Regarding maturation of competency, students' clinical performance did not develop over time over the three rotations.

The investigation of MH rotation showed the highest scores on both individual subscales of the FWPE and total clinical ratings. One explanation for this may be that students engage in specific activities in one practice setting, which may or may not elicit necessary behaviors in another. As Gonczi (2013) describe in his study; a student may perform differently in respective clinical settings as it elicit specific skill-sets that context or practice specific. Therefore, these results may have more to do with the effect of the rotation type. PED and PD rotation scores tended to show similar sub-scale scores, except for the Intervention score where PED had higher scores than PD. One explanation for this finding may be that PD practice requires more physical contact (e.g. specific technical and procedural skills) with patients compared to working with children. In addition, PD supervisors may be more attuned to the technical aspects of intervention and screening procedures in these settings. In support of this present study, Sheepway, *et al.* [3] also found that social work students' overall performance scores were higher with PED than in PD rotations, suggesting that specific clinical settings may demand or trigger the use of specific skills that differ across practice areas [4-7]. For example; in PEDS, there is a greater emphasis on communication and professional behaviors as part of student interactions with children, families and collaborative team members [10,11]. While a student may apply effective decision-making and clinical judgment within one diagnostic area, this same practice knowledge and competence may not be fully integrated, utilized, or generalizable to a different setting. Furthermore, the same skills and activities at one setting may not be required or elicited with another population with its own context specific symptoms [1,11,22].

Ward [17] explained setting specific differences between MH clinical scores and those in PD settings as related to students' use of different types of clinical reasoning skills. Students' applied interactive reasoning skills such as considering client's environment, life experience, and interests when making a clinical decision more frequently applied in MH practice settings. Procedural reasoning, such as adjusting equipment to a paraplegic client more commonly used in PD practice settings. Derald, *et al.* [18] suggests that a student's ability to perceive his or her performance skills in clinical arenas is, in itself, an important driver for problem solving, decision-making, and the capacity to recognize and understand patterns in complex practice settings. The results of the present study are in alignment with several studies which found that the primary factors that impacted student competency development and performance were context related as reflected in student's site specific use of knowledge, technical skills, problem solving and pattern recognition example [1, 7,8,10,11,18,24].

The investigation of changes in performance over time based on practice area revealed no maturation. Consistency of performance is difficult to measure because of different supervisors over three rotations, and that students have inconsistent rotation sequences, with each setting engaging different skill sets [3,4,6]. In support of the current findings, Richard's [20] study found that sequence over time of rotations was not perceived or reported by either supervisors or students to influence performance, although they did not perceive rotation type playing a role in student performance, nor overall professional development. However, Coates and Crist's [16]

and Ward's [17] studies of student professional development and clinical reasoning development showed that students in MH settings exhibited increased overall performance throughout this practice rotation. Derald, *et al.* [18] found that students' perception of their clinical competency progressed throughout their various clinical experiences over time. Holmes, *et al.* [8] as well as other studies have demonstrated clinical scores increased over time with each subsequent rotation [12,14,15].

This study contributes to the growing body of evidence of clinical education regarding practice area competencies [1,8,21]. Student performance may be impacted by practice area; therefore, clinical education may further establish ways to support student competencies within a variety of clinical settings. This study suggests there is no maturation affect as found by other researchers as well. The lack of maturation affect could be due to the various settings and context specific skillsets required in each rotation segment of the clinical education.

Limitations and Recommendation for Future Research

A convenience sample was used because the researchers had access to this particular group. Utilizing a larger sample size from other health profession programs may have made the findings more applicable. In this study, differences in supervisor's years of experience within and across rotations were not examined statistically. If there were discrepancies within and across rotations with supervisor's years of experience, it could affect the results; therefore, supervisor's years of experience would need to be considered as a confounding variable. Further research is needed to examine the impact of different rater perceptions across practice settings in addition to observation and interpretation of students' skill performance. An exploration of the overall relevance of practice setting to student competency would be in alignment with allied health professional educational agendas.

Conclusions

The present study found differences in clinical performance were influenced based on practice areas and not maturation. Future research is needed to determine whether placement type, or context specific skills exist, and if potential adjustments should be made in curricula to assist students by increasing necessary clinical competencies for specific practice areas.

Significance of Study Findings

- Identifying signature pedagogies for clinical education specific to practice areas may contribute to their students' professional development.
- Developing guidelines for measuring student performance based on practice setting may facilitate student development of clinical competencies.
- Assessing student's competency from novice to expert as related to site specific settings may enhance clinical education for the health professions.

Declaration of Authorship

All three authors were involved in the formation of this manuscript.

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