

2020

The Positive Impact of Occupational Therapy Involvement in Interprofessional Education

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Recommended Citation

Leveille, W., Brandes, J., Boos, K., Vega, A., Beck, B., Ruggeri, B., St. George, T. E., & Hopp, J. (2020). The Positive Impact of Occupational Therapy Involvement in Interprofessional Education. *Journal of Occupational Therapy Education*, 4 (4). <https://doi.org/10.26681/jote.2020.040405>

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The Positive Impact of Occupational Therapy Involvement in Interprofessional Education

Abstract

It is essential that members of a successful interprofessional healthcare delivery team understand the crucial roles and responsibilities of each profession. Participation in interprofessional education and practice has been suggested to improve understanding of the roles of each discipline on an allied health team, however, often understanding of the occupational therapy scope of practice is confusing to other allied health professionals. This study presents the outcomes of a community-based interprofessional practice experience with occupational therapy, physical therapy, and physician assistant students on perceived understanding of each profession's roles and responsibilities. In addition, this study introduces the Primary Care Training and Enhancement (PCTE) Interprofessional Actual and Perceived Knowledge Questionnaire to assess actual understanding of health professions' roles and responsibilities. The inclusion of occupational therapy students in the interprofessional practice experience resulted in a significant increase in physical therapy and physician assistant students' perceived understanding of occupational therapy's scope of practice (an increase of 11.0% and 23.4%, respectively, p

Keywords

Interprofessional practice; interprofessional education; allied health professions roles and responsibilities

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JOTE

Journal of Occupational
Therapy Education

Volume 4, Issue 4

The Positive Impact of Occupational Therapy Involvement in Interprofessional Education

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ABSTRACT

It is essential that members of a successful interprofessional healthcare delivery team understand the crucial roles and responsibilities of each profession. Participation in interprofessional education and practice has been suggested to improve understanding of the roles of each discipline on an allied health team, however, often understanding of the occupational therapy scope of practice is confusing to other allied health professionals. This study presents the outcomes of a community-based interprofessional practice experience with occupational therapy, physical therapy, and physician assistant students on perceived understanding of each profession's roles and responsibilities. In addition, this study introduces the Primary Care Training and Enhancement (PCTE) Interprofessional Actual and Perceived Knowledge Questionnaire to assess actual understanding of health professions' roles and responsibilities. The inclusion of occupational therapy students in the interprofessional practice experience resulted in a significant increase in physical therapy and physician assistant students' perceived understanding of occupational therapy's scope of practice (an increase of 11.0% and 23.4%, respectively, $p < 0.05$). Although not significant, findings from the original questionnaire demonstrated an improved understanding of occupational therapy compared to the other professions.

Introduction

As the cost and complexity of healthcare continues to rise, there is a need for change in the healthcare delivery system. Care coordination models which support patient-centered primary care are emerging to address the health outcomes associated with the goals of the “Triple Aim” (Moyers & Metzler, 2014), namely, to improve the individual experience of care, to improve the health of populations, and to reduce healthcare costs (Lamb & Metzler, 2013). Success of such models is highly dependent on approaches which are team-based, patient-centered, and include an interprofessional approach (Cipriano, 2012). Interprofessional collaboration and education which allows for sharing of knowledge and skill as well as promotes understanding and respect among health professionals is viewed as the best way to facilitate this approach (Moyers & Metzler, 2014).

Since 2010, the World Health Organization (WHO) has called for interprofessional education “to enable effective collaboration and improve health outcomes” (WHO, 2010). It is well-understood that complex medical issues, patient-centered care and improved health outcomes can best be addressed through an interprofessional collaborative team approach. There is ample literature to support the claim that interprofessional collaborative practice improves patient outcomes with an impact on effectiveness, efficiency, patient safety and patient satisfaction (Rouse et al., 2010; Titzer et al., 2012; WHO, 2010). The interdisciplinary team brings unique perspectives, combined knowledge and skill, clinical expertise, and understanding to patient care (Behm & Gray, 2012).

Knowledge of the role and scope of other professions and mutual respect are crucial to interprofessional collaboration for effective patient care and meaningful outcomes. However, research on health care teamwork reveals a tribal mentality with rampant stereotypes and hierarchies affecting interactions (Braithwaite et al., 2016). “To move toward collaborative care, [professionals] must overcome barriers such as uni-professional mindset, incompatible organizational priorities, and the lack of focus on teamwork found in traditional health care” (Johnson, 2017).

For interprofessional health teams to successfully deliver patient-centered care, members of the team need to understand each other’s roles and responsibilities which includes scope of practice and the “who” and “when” of making appropriate referrals. Evidence suggests that healthcare practitioners need to develop skills working in teams to achieve greater understanding and appreciation for the roles and responsibilities of members of the health professional team (Harward et al., 2006). Institutions cannot assume that routine interactions among health profession students will result in understanding of the benefits of interdisciplinary health care delivery, the role of various health professions nor how interdisciplinary teams function in providing patient-centered care (Harward et al, 2006).

There is evidence that occupational therapy is not well understood by other members of interprofessional teams. This profession is faced with the unique challenge that it is not perceived to be an integral part of a primary health care team (Smith & Makenzie, 2011;

Woodnorth & Davidson, 2019). Loy and colleagues (2015) have shown that there are misconceptions, misunderstandings and a lack of appreciation for occupational therapy and the role it can perform within interprofessional collaboration. Bonsall and colleagues (2016) reported that although 100% of those health system workers surveyed had heard of occupational therapy, there was a lack of understanding of the scope and breadth of occupational therapy services and the specific interventions they can provide. The role of occupational therapy has been hindered by ambiguity, confusion, and lack of clarity around the profession's scope of practice (Wilding & Whiteford, 2008).

Many studies have reported improved attitudes and perceptions about the roles of other health professions after participation in various interprofessional education (IPE) experiences (Harward et al., 2006; Lockeman et al., 2017; Titzer et al., 2012). Unfortunately, these studies only assess the perceptions and attitudes rather than examining the actual knowledge of the roles and responsibilities specific to the various health professions. A review of the literature indicates an absence of an actual knowledge assessment tool.

In an effort to increase allied health professionals' (physical therapy and occupational therapy) understanding of primary care referrals, and for physician assistant professionals to better understand allied health referrals, researchers of our study endeavored to *assess student knowledge of the roles and responsibilities specific to each health profession on an interprofessional team*. Given the assessment limitations described above, faculty team researchers developed a tool that addressed scope of practice for the specific disciplines involved in our project: physician assistant, physical therapy, occupational therapy, nursing, and public health. The resulting assessment instrument was administered to physician assistant, physical therapy, and occupational therapy first-year graduate students pre and post-involvement in an IPE experience with Hispanic seniors from a predominantly underserved community.

The purpose of this descriptive study was two-fold: to 1) assess students' changes in perceived knowledge/understanding of scope of practice of participating health professions after involvement in a community-based IPE experience; and 2) introduce a newly developed and validated questionnaire to assess graduate health professions student knowledge of roles and responsibilities specific to various allied health professions.

Methodology

As part of a five-year Health Resources and Services Administration (HRSA) Primary Care Training and Enhancement (PCTE) grant, an interprofessional team of faculty worked collaboratively to develop, implement, and assess an interprofessional integrative approach to healthcare curriculum within graduate and undergraduate health science programs. The interprofessional faculty team included the following disciplines: medical doctor (physician assistant program director), physical therapist, occupational therapist, registered nurse, and public health professional. The curriculum included integrative health online educational modules and an interprofessional case development experiential learning opportunity in a medically underserved Hispanic

community for first-year physician assistant, physical therapy, and occupational therapy students. Before starting the second year of this PCTE grant the interprofessional faculty team identified a desire to assess student knowledge of the roles and responsibilities of each health profession on or involved with the team. Activities were reviewed and approved by Western Institutional Review Board (IRB) as standard educational practice under B1 exemption (work order: #1-963419-1) and did not require participants' informed consent.

Integrative Health Curriculum

As part of their required program curricula first-year graduate physician assistant, physical therapy and occupational therapy students engaged in a 12-month integrative health curriculum through completion of the "Foundations in Integrative Health" course, a 31.6-hour online curriculum from the National Center for Integrative Primary Healthcare (NCIPH). The curriculum consists of six units focusing on the development of a core set of integrative health competencies and resources for healthcare providers in primary care. The graduate students completed the "Foundations in Integrative Health" curriculum over the three semesters of their first professional year (summer, fall, and spring). Although the curriculum was completed within each program's individual coursework, it established a common understanding and language for all students prior to the initiation of interprofessional teamwork.

Interprofessional Case Development and Implementation Experience

Following the first semester of the integrative health curriculum, all first-year physician assistant, physical therapy, and occupational therapy students began a two-semester interprofessional case development experience with a low-income Hispanic senior client aged 60 or older from a Hispanic community center in a medically underserved area. As with the integrative health curriculum, this learning experience was housed within required curricula for each individual program. The students utilized an integrative health-focused case study template developed in collaboration with the University of Minnesota Center for Health Interprofessional Program. This case study template was based on the integrative health framework and the social determinants of health and provided a strategy for the interprofessional team to gather information on their client's health and wellbeing, socioeconomic status, and physical environment, as well as other community-level data (Uden & Hess, 2016).

Students were randomly placed in 15 interprofessional teams consisting of 7-8 students each (1-2 physician assistant, 1-2 occupational therapy, and 4-5 physical therapy). Students remained with the same team for both semesters of the experience. Fifteen community-dwelling Hispanic seniors who participated in United Community Center (UCC) Senior Center activities were recruited for voluntary participation by UCC personnel during regular programming. Undergraduate public health and nursing students collaborated with teams by preparing and disseminating relevant applicable community-level information for consideration and inclusion in the final written case studies. These students were not members of the interprofessional team at the UCC due to conflicting availability. Additionally, undergraduate Spanish program students were identified as interpreters to facilitate bilingual communication.

In the first semester of the experience, the interprofessional teams and clients met face-to-face biweekly to develop an integrative health case study about the UCC Hispanic senior client using the provided template. Interprofessional student teams were instructed to consider and carry out their profession's typical roles and responsibilities during information collection and assessment for the written case studies. Each team also identified and outlined opportunities to enhance their client's health based on the social determinants of health. In the second semester of the experience, student teams implemented an interprofessional integrative health intervention with their Hispanic senior client based on their completed case study using each profession's applicable expertise and insight. The faculty directing the interprofessional teams assessed the client-centered interventions that students developed to determine their primary discipline focus with respect to occupational therapy, physical therapy, and physician assistant professions. Following both semesters of activity, a qualitative feedback form was administered to all students anonymously requesting students to list a piece of knowledge or skill they learned from the integrative health curriculum, interprofessional practice, health literacy, and the Hispanic community.

Tool Development and Validation

In the absence of a validated tool to specifically assess knowledge of health professions' roles and responsibilities, the interprofessional faculty team developed one. The tool had two parts. The first set of questions involved case study knowledge specific to the integrative health case study. These questions assessed student knowledge of the role of each discipline on the interprofessional team and who on the team was appropriate for referral. The second set of questions asked students to rate their understanding of the knowledge and skills of their own discipline and the disciplines of others on the team.

Individual faculty team members, representing their program/discipline, wrote case study questions prompting responders to determine which professional was most likely to address the described issue. A bank of all questions was developed and the interprofessional faculty team narrowed it down to questions deemed relevant and realistic for the target population (the first year physician assistant, physical therapy, and occupational therapy students). In total, ten case study questions were chosen by the interprofessional faculty team, two questions for each discipline involved in activities (physician assistant, physical therapy, occupational therapy, nursing, and public health). Additionally, the interprofessional faculty team identified a desire for the physical therapy and occupational therapy students to understand referrals within primary care and conversely for the physician assistant students to understand allied health referrals. As a result, five questions were developed for the physical therapy and occupational therapy students which described specific patient findings and asked what their next steps in primary care referral should be. Five questions were also developed for physician assistant students describing specific patient findings and asking if the patient should be referred to occupational therapy or physical therapy for follow-up. In an effort to validate these questions, the twenty knowledge questions described above were administered to College of Health Science faculty within the five disciplines included in the interprofessional experience. These expert respondents included occupational

therapists (3), physical therapists (2), physicians or physician assistants (3), registered nurses (5), and public health professionals (1). Results were analyzed and discussed by the interprofessional faculty team. Questions with correct faculty responses totaling 80% or higher were deemed valid by the faculty team. Of the initial twenty questions, twelve were validated utilizing this criterion and were included in the final tool, called the PCTE Interprofessional Actual and Perceived Knowledge Questionnaire (see Appendix A).

In addition to the unique interprofessional faculty questions, the final assessment tool also included an adapted question from Harward et al., (2006) prompting students to rate on a Likert-type scale their perceived knowledge and skills of their own profession as well as the other professions represented in the interprofessional faculty questions. The question was originally used to assess medical student knowledge of the training and skills of ten health professions before and after an interdisciplinary case conference and was used with author permission in this assessment.

Procedures

The PCTE Interprofessional Actual and Perceived Knowledge Questionnaire was administered to 129 students, consisting of physician assistant (n=20), occupational therapy (n=30), and physical therapy (n=79) students, prior to initiation of the interprofessional case development experience. The assessment was not administered to nursing and public health students as their role was to provide relevant information from their discipline to interprofessional teams, but they were not on the teams themselves. Following the two-semester interprofessional case development experience, approximately seven months after pre-testing, the same assessment tool was administered to the 129 interprofessional students.

Data Analysis

The two parts of the PCTE Interprofessional Actual and Perceived Knowledge Questionnaire were analyzed separately. Of the twenty questions assessing actual knowledge of each profession, twelve were analyzed pre and post intervention as these questions met the established criteria of having over 80% of College of Health Sciences faculty in these professions answering the questions with the same response. These were deemed the correct answers when determining the student's score pre and post intervention for these twelve questions. Data was grouped for each student profession with respect to their pre to post score on these questions. Paired t-tests were performed to determine statistical significance. Statistical significance was established for results with a p-value of <0.05.

The second part of the PCTE Interprofessional Actual and Perceived Knowledge Questionnaire, in which students from each profession scored their perceived knowledge of their own and other professions on a Likert-type scale from 1 to 5 (see survey questions in Appendix A), was analyzed by averaging the Likert scores for each student profession with respect to their perceived knowledge of their own and other professions. These average Likert scores were determined pre and post intervention. Paired t-test were performed to determine statistical significance. Statistical significance was established for results with a p-value of <0.05.

Finally, the faculty directing the interprofessional teams reviewed the team's client-centered interventions with respect to their discipline focus and labeled each intervention as primarily occupational therapy-focused, physical therapy-focused, or physician assistant-focused.

Results

Upon entry into the interprofessional case development experience, the 129 first year physician assistant, physical therapy, and occupational therapy students were 22.8 ± 1.25 years old, with 79.1% (n=102) reporting as female and 20.9% (n=27) as male. Within this cohort, 86.8% (n=112) identified as Caucasian, 5.4% (n=7) as Asian, 3.9% (n=5) as Hispanic, and 3.9% (n=5) were unreported. The physician assistant students (n=20) had a slightly higher average age (23.9 ± 2.52) compared to the occupational therapy students (n=30) with an average age of 23.1 ± 0.96 and the physical therapy students (n=79) with an average age of 22.4 ± 0.34 .

Case Study and Referral Actual Knowledge Pre/Post IPE Intervention

There was no significant improvement pre to post IPE case development experience in the twelve validated questions concerning referral to physical therapy, occupational therapy, or physician assistant-primary care among students. For the three questions with referral to physical therapy as the correct response, all three showed a decline in the correct response from pre to post-testing among the student cohort. For the four questions with referral to the physician assistant-primary care as the correct response, all four showed a decline in the correct response pre to post-test among the student cohort. For the five questions with referral to occupational therapy as the correct response, three showed an improved pre to post response among the student cohort, although not statistically significant. Power analysis of these three questions revealed (at the highest) an effect size of 0.522 and a power of 0.525. Overall, the twelve questions in this interprofessional knowledge questionnaire did not detect significant differences in pre to post-testing of participant's knowledge of other professions within the IPE case development experience.

Perceived Knowledge of Discipline-Specific Skills Pre/Post IPE Intervention

Physician assistant, physical therapy, and occupational therapy students rated their knowledge of the training/skills within each professional discipline on a 1-5 point Likert-type scale (1=none, 2=minimal, 3=moderate, 4=significant, and 5=comprehensive) pre and post- the IPE case development experience. Results are shown in tables 1-3.

As shown in the Table 1, significant improvement in perceived knowledge of the occupational therapy profession occurred after the IPE case development experience among occupational therapy, physician assistant, and physical therapy students. Table 2 demonstrates only significant improvement in perceived knowledge of the physical therapy profession after the IPE case development experience among physical therapy and occupational therapy students, but not among physician assistant students. Table 3 depicts significant improvement in perceived knowledge of the physician assistant profession after the IPE case development experience among occupational therapy and physical therapy students.

Table 1

Perceived Knowledge of Occupational Therapy Profession

Students	Pre-IPE Response (Mean)	Post-IPE Response (Mean)	p-value	Pre to Post Percent Increase
Occupational Therapy	3.700	4.731	0.000	+27.9%
Physician Assistant	2.700	3.333	0.013	+23.4%
Physical Therapy	3.127	3.471	0.001	+11.0%

Table 2

Perceived Knowledge of Physical Therapy Profession

Students	Pre-IPE Response (Mean)	Post-IPE Response (Mean)	p-value	Pre to Post Percent Increase
Occupational Therapy	2.900	3.654	0.002	+26.0%
Physician Assistant	3.300	3.500	0.340	+6.0%
Physical Therapy	4.443	4.794	0.000	+7.9%

Table 3

Perceived Knowledge of Physician Assistant Profession

Students	Pre-IPE Response (Mean)	Post-IPE Response (Mean)	p-value	Pre to Post Percent Increase
Occupational Therapy	2.500	3.120	0.003	+24.8%
Physician Assistant	4.550	4.833	0.060	+6.2%
Physical Therapy	2.646	3.044	0.000	+15.0%

Focus of Client-Centered Interventions

Of the provided client-centered interventions, twelve of the fifteen had an occupational therapy focus such as adaptive equipment, sleep hygiene, and modification or adaptation in activities of daily living.

Discussion

The results of this study indicate that while each discipline gained knowledge and understanding about each other and their scope of practice, all disciplines learned the most about occupational therapy. This increased proficiency is evidenced by the statistically significant perceived knowledge pre to post (IPE experience) responses. Isolating the results of each allied health profession, physician assistant perceived knowledge of occupational therapy increased by 23.4% (significant) and physical therapy by 6% (non-significant). Physical therapy students' knowledge of occupational therapy increased by 11% (significant) after the IPE experience despite being familiar with occupational therapy through their usual curriculum. Interestingly, even occupational therapy students' perceived knowledge of their own profession improved significantly. Occupational therapy students' knowledge of their own profession improved by 27.9% after the IPE experience.

The interprofessional faculty involved in this study believe that individual students learned most about occupational therapy during the IPE experience, compared to physician assistant and physical therapy professions, for multiple reasons. First, occupational therapy is the least known and understood of the allied health professions (Jamnadas et al., 2002). Second, there is very little published evidence about interprofessional practice involving occupational therapy (Laskin et al., 2001). Third, there is little understanding about the breadth and depth of the field of occupational therapy. According to Jamnadas et al. (2002), most allied health professions see occupational therapy "within a very narrow scope, consisting of mainly activities of daily living" (p. 14). The occupational therapy scope of practice and framework is diverse and includes more than just activities of daily living. The American Occupational Therapy Association (2014) indicates that occupational therapists can treat individuals from birth to death and defines occupations as "everyday life activities" which includes but is not limited to activities of daily living, instrumental activities of daily living, rest and sleep, education, work, play, leisure, and social participation. Furthermore, because occupational therapy covers a large scope of occupations, it can be difficult to define in simple terms. In fact, some healthcare professionals have a difficult time differentiating between physical therapy and occupational therapy and see occupational therapy as a subset of physical therapy (Jamnadas et al., 2002).

In this study, the various allied health professions worked collaboratively on a client-specific case where they were able to effectively learn about each profession including skills the profession can offer in a community-based client care setting. The interprofessional faculty involved in this study found that the majority of interprofessional student teams offered occupational therapy intervention to participating clients. It is believed this is because occupational therapy interventions were easily identified and prescribed to directly address the specific needs of the client. For example, twelve of the fifteen interventions were occupational therapy based in nature. These interventions included, but were not limited to, decrease risk of falls, manage mental health, increase sleep quality, and manage pain to tolerate activities of daily living. The overall purpose of the IPE experience included generalized health and wellness, which tend to lead to occupational therapy type interventions. As a result, occupational therapy, physical

therapy, and physician assistant students developed a better and more in depth understanding of occupational therapy and how occupational therapy can impact a client's life—knowledge that they previously did not realize nor appreciate.

All in all, the results of our study support previous literature claims that occupational therapy is the least known and understood of all allied health professions (Jamnadas et al., 2002). The results of this study support the value to incorporate occupational therapy into allied health IPE experiential learning programs. This enhances effective education of the roles and responsibilities of occupational therapy to facilitate interprofessional collaborative care for improved patient outcomes.

To be effective, training programs of allied health professions must include education about what occupational therapy is and has to offer in patient and client care. For example, physician assistants who have had an experience such as the one described in this study, will be better equipped to know which patients and when to refer to occupational therapy services in a timely and appropriate fashion for the greatest patient care outcomes.

Limitations

In addition to perceived knowledge of each profession's pre and post IPE experience, this study attempted to evaluate acquired knowledge of each profession in a more objective manner. Upon investigation, currently there is no tool that evaluates the actual knowledge about each allied health profession. Our attempt at creating a validated knowledge questionnaire pre and post IPE experience revealed improvement in knowledge only with respect to the occupational therapy profession referral compared to the physical therapy and physician assistant profession referrals (although it did not reach statistical significance). Interestingly, all students showed a decline in scores pre to post in questions in which physical therapy or physician assistant-primary care referral was the correct choice. This, in part, may be due to the finding that most interventions chosen by the teams were occupational therapy-focused (twelve out of fifteen), thus resulting in significantly more exposure of this profession over the other two during the IPE experience. Perhaps this finding is related to a basic actual knowledge of the professions before the IPE experience. What physical therapists or physician assistants-primary care do as part of a clinical team is better understood in general, compared to other allied health professionals. The IPE experience may have "muddied the water" in terms of their knowledge of these better understood professions thus making the questions a bit more complicated to answer post-intervention. However, the students' actual knowledge of what occupational therapists do was minimal to none pre-IPE experience, thus resulting in improved post IPE scores post-IPE experience since there were no preconceived notions. Conversely, the decline in scores pre to post IPE experience with respect to physical therapy and physician assistant-primary care referrals may reflect the validity and reliability of the PCTE Interprofessional Actual and Perceived Knowledge Questionnaire developed for this study.

Accordingly, it would appear that the main limitation in this study does reside with the expert-validated knowledge questionnaire given pre and post IPE intervention. To our knowledge, this is the first questionnaire of its type to assess students' knowledge of the roles and responsibilities of other health professions; specifically, physical therapy, physician assistant, occupational therapy. Our knowledge questionnaire failed to detect differences (improvement in knowledge) even if it occurred. Because there was a trend for an improvement in occupational therapy knowledge, we believe an increase in the number of participants may show a greater effect. A new cohort of students will participate in this project during year four of grant activities which will increase the overall number of participants taking the pre and post knowledge questionnaire. This increase in number may better detect differences in the improvement of knowledge of the different professions. In addition, the knowledge questionnaire instrument requires further content expert and literature validation. But, perhaps most importantly, the knowledge questionnaire requires further validation through reproducibility from ongoing application with practicing allied health professionals and students.

Implications for Occupational Therapy Education

There is a need for all allied health professional students to have opportunities to discuss knowledge and understanding about all disciplines that participate in patient care. The presence of occupational therapy students within IPE experiences is important to assist with understanding of occupational therapy and what occupational therapy can offer to health and wellness in community practice as well as other clinical areas.

Perhaps more importantly, it is vital to include occupational therapy in IPE teams to teach their roles and responsibilities to other health professionals, as demonstrated in this study. This study validates the need to continue with and enhance IPE education because it mimics clinical practice upon graduation and promotes a holistic/ team approach to care which is vital in clinical practice today. Exposure to occupational therapy and other disciplines early is one way to decrease bias and increase awareness of each discipline's philosophy, goals and ideas and what differentiates them from each other.

This study is an example of patient interventions by a truly interprofessional (occupational therapy/physical therapy/physician assistant) team who developed all aspects of the case report, analysis, patient intervention, follow-up, and presentation. These experiences must include the occupational therapy profession since it is the most misunderstood allied health profession. Interprofessional education experiences like the one described in this study should be part of all allied health professional curriculums. It is particularly important to include occupational therapy within the IPE experience which will promote a better understanding of the profession within care settings, both in-patient and out-patient—an important finding in this study.

Conclusion

An understanding of allied health professional roles and responsibilities is critical to interprofessional clinical practice. Interprofessional education experiences during training, such as the one presented in this article, are important in providing a framework for students to learn about their own and other allied health professions. As reported in this study, the addition of occupational therapy as part of the IPE experience is essential, as evidenced by the findings of the PCTE Interprofessional Actual and Perceived Knowledge Questionnaire which was developed in this study to detect changes pre and post IPE experiences. Perceived knowledge of occupational therapy increased the most significantly among all professional students post IPE experience compared to perceived knowledge of the other health professions. Further, the actual knowledge of occupational therapy improved post IPE experience compared to a decline in actual knowledge of the other health professions as revealed in the developed questionnaire (although not statistically significant). These findings may be related to an initial lack of understanding of the occupational therapy scope of practice. General understanding of occupational therapy is typically limited to activities of daily living and does not include the other performance areas including instrumental activities of daily living, rest and sleep, education, work, play, leisure, and social participation. These occupational therapy-focused activities were a key component to the majority of client interventions developed by the IPE teams, hence exposing the allied health students to an expanded scope of occupational therapy practice and providing a better understanding of the impact occupational therapy has on a patient's everyday life. Clearly, occupational therapy needs to be a key component to IPE experiences developed as part of the curriculum of allied health professionals.

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Appendix A

PCTE Interprofessional Actual and Perceived Knowledge Questionnaire

Case-Study Questions

1. Joe is a 33 year old male who suffered a complete spinal cord injury at T8 due to a Motor Vehicle Accident (MVA). Joe is being followed by the PA in the rehab unit. Joe is nearing Discharge (DC) home. He is Independent in mobility and Activities of Daily Living (ADLS) but is limited in going home because he hasn't learned self-catheterization –to which health care provider should Joe most likely be referred?
 - a. **Answer:** Registered Nurse
2. Katarina is a 71-year-old female who has developed a “frozen” right shoulder. She is right handed and is unable to put on her bra, “wash up” or lift her kettle to make her morning tea. To which health care provider would she most likely be referred?
 - a. **Answer:** Occupational Therapist
3. Jack is a 56-year-old who developed left knee pain 3 months ago after doing a “Tough Mudder.” He has been self-medicating and icing after activity. He has continued swimming and golf but finds that his knee is still swollen and painful. He is frustrated because he hasn't been able to return to running. To which health care professional should Jack most likely be referred?
 - a. **Answer:** Physical Therapist
4. You are new to Milwaukee and were asked to come up with a community health outreach program at your new job. Which health care professional would you be most likely to ask for assistance?
 - a. **Answer:** Public Health Professional
5. Lila is a 5 year old girl at your son's school. Her mom told you she has been diagnosed with Autism Spectrum Disorder. Mom has concerns about behaviors she has noticed with Lila- difficulty tying her shoes, punching her leg when she gets upset and an aversion to soft foods which is impacting her eating. To which health care provider would Lila most likely be referred?
 - a. **Answer:** Occupational Therapist
6. Tim is a student athlete on the baseball team. He is the pitcher and is having shoulder pain. To which health care provider would he most likely be referred?
 - a. **Answer:** Physical Therapist
7. You are working at the hospital with a patient who suffered a Cerebrovascular Accident (CVA) 3 days ago. Today you notice a decline in his cognitive response compared to your interaction with him yesterday. To which health care provider would you most likely refer the patient?
 - a. **Answer:** Physician Assistant

Validated Appropriate Referral Questions About Primary Care for PT and OT Students

1. Patient having chest pain with sweating
 - a. **Answer:** Refer/direct to emergency care

Validated Appropriate Referral Questions About Allied Health for PA Students

1. You are treating a patient with chronic Low Back Pain and believe they are showing signs of Opioid Addiction and you do not want to increase or change any medications at this time.
 - a. **Answer:** Refer to the Physical Therapist
2. You are seeing a patient in the clinic with Chronic Obstructive Pulmonary Disease (COPD) whose Heart Rate increases to 135 beats/minute and O₂ (oxygen) saturation decreases to 87% on 3L (liters) of continuous supplemental oxygen during any activity. You fear she is over-exerting herself with her self-care activities at home. You would like to refer her to a professional to address home modification/adaptation and energy conservation techniques.
 - a. **Answer:** Refer to the Occupational Therapist
3. You are seeing a patient in the clinic who seems more depressed and note an increase in alcohol consumption, you would like to refer for exploration of leisure activities and mental health support group.
 - a. **Answer:** Refer to the Occupational Therapist
4. You are seeing a patient on the Cardiology Unit who is 3 days status post Coronary Artery Bypass Grafting (CABG). They are complaining of increased incisional chest pain primarily during donning and doffing of pants, socks and shoes.
 - a. **Answer:** Refer to the Occupational Therapist

Perceived Knowledge of Allied Health Professions Questions Adapted from Harward 2006

Each of the below questions is to be rated on the following scale: 1=none; 2=minimal; 3=moderate; 4=significant; and 5=comprehensive

1. Rate your knowledge of the training and skills of: Occupational Therapists
2. Rate your knowledge of the training and skills of: Physical Therapists
3. Rate your knowledge of the training and skills of: Physician Assistants
4. Rate your knowledge of the training and skills of: Registered Nurses
5. Rate your knowledge of the training and skills of: Public Health Professionals