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An Evaluation Of Interprofessional Knowledge And Attitudes In Graduate Students From Six Programs In Health Sciences After An Interprofessional Education Workshop Experience

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AN EVALUATION OF INTERPROFESSIONAL KNOWLEDGE AND ATTITUDES IN
GRADUATE STUDENTS FROM SIX PROGRAMS IN HEALTH SCIENCES
AFTER AN INTERPROFESSIONAL EDUCATION
WORKSHOP EXPERIENCE

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Dedication

This paper is dedicated to my family: Sergio, Cecilia and Janeth Velasco. Thank you for never doubting my ability to succeed, for shaping me into the woman I am today, for your undying support, and for being my biggest fans. Mama y papa, thank you for risking everything, crossing the border to get us here, and making our dreams your dreams. Sister, thank you for teaching me resilience, for making me strong, and for believing in me before I believed in myself. Gracias, los amo.

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WORKSHOP EXPERIENCE

by

JOANNA VELASCO, B.A.

THESIS

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Abstract

Interprofessional Education (IPE) occurs when two or more disciplines learn about, from, and with each other to provide interprofessional patient-centered care which ultimately improves patient health care outcomes (WHO, 2010). Through collaboration, students not only bring their own expertise, but are given an opportunity to learn what the other disciplines can offer for the same patient. Although IPE's importance is highly recognized, many universities do not engage in IPE practice because of scheduling difficulties, lack of faculty involvement, implementation challenges for various levels of competency, and uncertainty of how to measure the effectiveness of IPE activities (Johnson et al., 2015). Ongoing efforts are being made at The University of Texas of El Paso (UTEP) to incorporate IPE into disciplines' curriculum. This pilot project evaluated an IPE workshop's impact on Health Sciences graduate/doctoral program's potential increases from pre- to post-test measures, and different patterns of knowledge and/or experience between programs. The pilot project also evaluated whether the workshop met the participants' expectations. The present workshop was cost effective, as noted by the increases of pre- to post-test scores in all programs. The results from this pilot project pose a significant importance for the implementation of IPE in Health Sciences curriculum.

Table of Contents

Acknowledgements	v
Abstract	vi
Table of Contents	vii
List of Tables	ixx
List of Figures	x
Chapter 1: Literature Review	1
Challenges to IPE Implementation	2
IPEC Core Competencies	3
Instruments to Measure IPE.....	4
ASHA’s Strategic Pathway to Excellence	7
University of Texas at El Paso (UTEP) Health Sciences and IPE.....	7
IPE Task Force.....	8
Purpose of Pilot Project	9
Chapter 2: Methods and Procedures	9
Participating Programs	9
Assessment Tools.....	10
IPE Workshop	11
Guided lecture	11
Case study discussion	11
Reflection sessions.....	12
Data Analysis	12
Chapter 3: Results	14
IPE Knowledge and Program Differences	14
Content Analysis.....	15
Evaluation Responses	17
Chapter 4: Discussion	19
Future Work	21

Conclusion	22
References	24
Appendix.....	27
Vita.....	34

List of Tables

Table 2.1: Number of Participants	9
Table 3.1: Mean Scores Pre- and Post-Test	14
Table 3.2: Major Themes and Sub-Themes	16
Table 3.3: Evaluation Averages Scores.....	17

List of Figures

Figure 3.1: RIPLS	15
Figure 3.2: IPAS	15

Chapter 1: Literature Review

Introduction

Interprofessional education (IPE) prepares students to work together with other disciplines in order to provide quality services for patients in the future (Buring et al., 2009; Johnson, & Freeman, 2014; Lawlis, Anson, & Greenfield, 2014; Reeves, Goldman, & Oandasan, 2007). The World Health Organization states that interprofessional education occurs when “two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes.” (WHO, 2010). During IPE activities, students learn to work in interdisciplinary teams, in order to provide interprofessional patient-centered care which ultimately improves health care outcomes (Buring et al., 2009; Johnson & Freeman, 2014; Lawlis, Anson, & Greenfield, 2014). Through interdisciplinary efforts, each member of the team recognizes the needs of the patient, and brings together their own individual expertise to develop a health care plan incorporating all key factors from the different disciplines. (Bridges et al., 2011; Buring et al., 2009). The implementation of IPE in university’s curricula can help improve healthcare systems and outcomes in the work place by preparing students for effective collaboration with other health professionals (Reeves, Tassone, Parker, Wagner, & Simmons, 2012).

IPE creates mutual respect among disciplines, increases knowledge about other disciplines, and builds strong team communication for future services (Abu-Rish et al., 2012). By learning together, students gain the ability to manage patient complexities incorporating a collaborative health care plan (Teodorczuk, Khoo, Morrissey, & Rogers, 2016). For IPE to be efficient, equal representation of different disciplines in a team as well as equal and active participation from team members is required (Reeves et al., 2012). IPE efforts also require

commitment and facilitation from faculty/facilitators before, during, and after IPE experiences (Reeves et al., 2012). Commitment from facilitators can aid in the overall organization of the IPE experience. (Reeves et al., 2012; Reeves et al., 2010; Reeves et al., 2009).

IPE allows students to work and learn together by bringing individualized knowledge and skills from their own disciplines. Some activities are advertised as IPE, when they really are not. It is important to recognize that activities involving students from different disciplines are not necessarily IPE. Some examples of these activities that are not IPE include: (1) students from different health professions taking classes together, (2) participating in a patient-care setting which is led by an individual from another profession without shared effective collaboration, and (3) individual professions learning about what other professions do (Buring et al., 2009; Reeves et al., 2009). Ineffective IPE collaboration can result in a lack of understanding and clarification about other disciplines, lack of knowledge of disciplines roles and responsibilities, lack of communication between team members, and poorly coordinated teamwork (Reeves et al., 2009).

Challenges to IPE Implementation

Although many recognize the importance of IPE, its implementation poses significant challenges resulting in non-engagement with IPE at many universities. Students in graduate and doctoral programs often have busy schedules, resulting in scheduling difficulties. A lack of faculty collaboration and commitment for planning and implementation of IPE can result in poorly planned experiences. Participating students can have varying clinical and competence experience; this circumstance creates a demand for IPE trainings that incorporate areas for less experienced students, but that also include challenging areas for students who are more advanced (Johnson et al., 2015). A growing number of assessment measures are available to assess efficacy of IPE trainings, resulting in an increased time demand to review existing literature and

chose the appropriate evaluation tool. Logistical issues with classrooms, setup, and cost of IPE trainings creating a further demand for time and planning (Teodorczuk et al., 2016).

Despite these challenges to IPE implementation, these difficulties can be overcome by university programs. There should be an ongoing communication and collaboration between all programs who wish to be involved. There should also be commitment from faculty members in order to make time to plan the IPE activities within their programs and explore existing literature to find appropriate assessment tools based on their particular needs. Commitment to follow evidence-based strategies. Faculty from all participating disciplines should be present during IPE activities in order to lead discussions, guide their students through the training, and support those students with less experience. Lastly, there should be ongoing IPE evaluation to showcase the benefits of IPE implementations in order to help secure administrative support and resources for future IPE experiences (Teodorczuk et al., 2016).

IPEC Core Competencies

With the growing interest for IPE, the need to establish common core competencies for those universities who were ready to implement IPE led to the creation of agreed upon competencies. The Interprofessional Education Collaborative identified a set of core competencies for the implementation of IPE (IPEC, 2016). IPEC is represented by professional groups such as the American Speech Language and Hearing Association, American Physical Therapy Association, American Occupational Therapy Association, Association of Colleges of Nursing, American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, Association of Schools of Public Health, Council on Social Work Education, among others.

The IPEC Core Competencies are divided into four domains and are needed in order to

provide a foundation and guide/coordinate IPE, assess IPE experiences, strengthen IPE scholarship, and integrate IPE into disciplines' curriculum (IPEC, 2016). The Core Competencies for Interprofessional Collaborative Practice Domains include: values/ethics for interprofessional practice (which aims at incorporating mutual respect and shared values between different professions); roles/responsibilities (which creates a distinction between professions roles and uses their knowledge to address the healthcare needs of patients); interprofessional communication (which aims at establishing effective communication between professions, patients, and families); and teams and teamwork (which aims at working in a team to deliver appropriate patient-centered care).

University programs that wish to implement IPE into their curricula should keep core competencies in mind in order to develop efficient trainings following an evidence-based practice implementation (Moyers & Finich-Guthrie, 2016). A number of universities have successfully implemented IPE into their curriculum, using the IPEC Core Competencies (Johnson et al., 2015). For example, Ohio University created a classroom and clinical IPE experience with students from nursing, social work, physical therapy, audiology and speech-language pathology, food and nutrition, and the College of Osteopathic Medicine. Through this 3-year project, Ohio University has concluded that IPE should be centered around core competencies (Johnson et al., 2015).

Instruments to Measure IPE

As IPE continues to expand in health professions education (Reeves et al., 2012), a growing need exists to identify appropriate tools to measure the effectiveness of IPE trainings/experiences. Countless IPE measures have been developed throughout the years. In an

unpublished manuscript, Marlow and colleagues (n.d.) identified 53 measures intended to measure IPE experiences and rated them based on accessibility, clarity of language, validity, reliability, among others. According to the authors, tools had not been tested for reliability or validity, warranting additional time from researchers to review existing tools and pick appropriately in order to measure effectiveness of IPE trainings/experiences (Marlow, Lacerenza, Iwig, & Salas, n.d. retrieved from: <https://s3-us-west-2.amazonaws.com/nexusipe-resource-exchange/Assessing+Health+Care+Team+Performance.pdf>).

For the purposes of this pilot project, two tools and a set of open ended questions were selected. These tools were selected based on their reliability and validity. Furthermore, these two tools measure students' knowledge and attitudes of IPE, and expectations of IPE activities, which was of interest for this pilot project. The *Readiness for Interprofessional Learning Scale (RIPLS)* was originally developed by Parsell & Bligh (1999) to assess the 'readiness' of health care students for interprofessional shared learning. The assessment instrument was given to 120 second-year graduate students from eight different professions (medicine, dentistry, physiotherapy, nursing, occupational therapy, orthotics, and therapy and diagnostic radiography). The RIPLS is composed of 19 items, which are rated on a 5 point Likert scale (1 = strongly agree, 5 = strongly disagree). The tool assesses "team-working and collaboration, professional identity, and professional roles" (Parsell & Bligh, 1999). The authors' analysis indicated that the *RIPLS* had high content validity and an acceptable internal consistency making it an effective measure of interprofessional learning activities at different times (Parsell & Bligh, 1999). The tool has since been used by many authors who wished to assess change of interprofessional knowledge in students over time (Hordsburgh et al., 2001; Hind et al., 2003; Baxter, 2004). However, since its publication, doubts have been raised as to whether this tool can

be considered reliable (McFadyen, Webster, & Maclaren, 2006). Mc Fadyen et al., (2005) evaluated the tool's internal consistency, and proposed different sub-scales than the original one. They concluded that researchers could be confident that their proposed model was more stable than the previous version.

Another tool for assessment of IPE outcomes is the *Interprofessional Attitudes Scale (IPAS)*. The IPAS is based on the IPEC Core Competency domains which measures the interprofessional attitudes of students in health care professions (Norris et al., 2015). This assessment instrument was validated with 701 students recruited from four schools and colleges of the University of Utah Health Sciences Center. The tool is composed of 27 items, which are rated on a 5 point Likert scale (1= strongly disagree, 5 = strongly agree). Nine items on the *IPAS* are based on the *Readiness for Interprofessional Learning Scale*, and 18 items are based on the IPEC Core Competencies. The tool was given to participants, and the data were analyzed for alignment with the IPEC Core Competencies as well as construct validity and internal reliability. The authors' analysis of the tool indicated that the *IPAS* had good construct validity and thus should prove useful to health sciences institutes implementing IPE in their curriculum. (Norris et al., 2015).

A final tool has been suggested by ASHA. In 2015, an ASHA special interest group (Board of Special Interests Group Coordinators) published, "*Interprofessional Education and Interprofessional Practice in Communication Sciences and Disorders: An Introduction and Case-Based Examples of Implementation in Education and Health Care Settings.*" The authors provided examples of interprofessional implementations in health care programs from a couple of universities, and further described the ways in which they assessed their IPE trainings. In these explanations, they offered a set of open-ended questions to include in IPE assessments.

These questions covered the benefits students anticipated from IPE trainings and from working in a team, as well as previous IPE experiences, if any.

ASHA's Strategic Pathway to Excellence

IPE is important for universities offering health professions education including Communication Science and Disorders degrees. Reflecting the importance of IPE, ASHA has published a set of strategic objectives and outcomes for 2025 (ASHA, 2016) that address this topic. Specifically, Objective #2 is to: "Advance Interprofessional Education and Interprofessional Collaborative Practice". A specific outcome for Objective #2 is that the "Academic programs employ IPE approaches to personnel preparation and both students and ASHA members engage in interprofessional collaborative practice." Thus, universities offering Communication Disorders degrees must incorporate IPE into their curriculum, and thus prepare their students to be effective members of interprofessional teams upon graduation.

University of Texas at El Paso (UTEP) Health Sciences and IPE

With growing recognition that graduates must be prepared for effective interprofessional collaborative practice, faculty in the College of Health Sciences at UTEP has been increasingly active in planning and implementing IPE. In 2015, faculty from the Doctor of Physical Therapy Program (DPT), Master of Occupational Therapy Program (MOT), and the Speech-Language Pathology Master's Program (SLP) graduate programs published a paper which outlined an interprofessional training on interpreter-use for rehabilitation students at UTEP (Summers, Gonzales, & Pechak, 2015) The interprofessional interpreter-use training was then implemented with students from DPT, MOT and SLP during the Fall of 2015. Interprofessional knowledge from pre- to post-test was examined, as well as different patterns of behavior between disciplines.

Results showed an overall increase in interprofessional knowledge from pre- to post-test measures. (Pechak, Summers, Velasco, in press). On the evaluation, students also overwhelmingly mentioned the value they saw in learning with each other, as well as gained knowledge about other disciplines through this experience. Student evaluations have been used to improve training for the next years based on student feedback. For example, students suggested additional time to review before the training, and thus they now receive information to prepare with at least a day before the training.

IPE Task Force. In May 2016, faculty in the School of Pharmacy invited faculty from the College of Health Sciences to form an IPE Task Force. The resulting task force initially included faculty and students from the Occupational Therapy, Physical Therapy, Rehabilitation Counseling, School of Pharmacy, Social Work, and Speech-Language Pathology. The purpose of the IPE Task Force was to develop and implement IPE for the students of the represented disciplines. This task force eventually evolved into the Health-Focused IPE Community of Practice, and added representation from the School of Nursing.

Since its early stages, members of the IPE Task Force decided to focus IPE activities on cases involving vulnerable populations. Hasnian et al (2012) called for students to understand the needs of these populations. The IPE Community of Practice determined that IPE was an excellent vehicle to teach students how to address the complex needs of vulnerable patients.

Thus, the members of the IPE Task Force developed an inaugural IPE workshop framed around the transgender population. This population experiences discrimination and stigma from their communities and health care providers, resulting in negative health care outcomes (Good & Fisher, 2012). The training was implemented in 2017. The purpose of this paper is to describe the findings of the evaluation of this pilot IPE training.

Chapter 2: Methods and Procedures

Participating Programs

The assessment of the pilot project was designated as a program evaluation by the UTEP Institutional Review Board. One-hundred and eight students from 6 graduate/doctoral programs at UTEP participated in this pilot project. Participating professions included: Doctor of Physical Therapy (DPT) program, Masters of Occupational Therapy Program (MOT), Masters of Speech-Language Pathology program (SLP), Masters of Social Work Program (MSW), Masters of Rehabilitation Counseling Program (MRC), and the School of Pharmacy (PharmD).

To ensure participation from students, faculty from two programs decided to implement the IPE workshop into their course's curriculum. For example, the Speech-Language Pathology Program added the workshop in the Aphasia course syllables, and counted the attendance to the workshop for 15% of their overall grade. One-hundred and eight students attended the workshop. However, not all students completed pre- and post-test measures. Table 2.1 shows the total number of students who participated in the training, as well as the number of students who completed pre- and post-test measures.

Table 2.1.

Number of participants

	DPT	MOT	SLP	MRC	MSW	PharmD	Total
Pre-Test	35	22	19	15	7	10	108
Post-Test	34	22	19	14	4	8	101
Training	35	22	20	15	5	11	108

Assessment Tools

The survey developed for the pilot project (Appendix A) was adapted from the *RIPLS* (Parsell & Bligh, 1999), *IPAS* (Norris et al., 2015) and the ASHA's report on interprofessional education (Johnson et al., 2015). The surveys measured the students' knowledge and/or experiences with IPE. Additionally, for the pre-survey, three open-ended questions were included; these explored what students saw as potential benefits of the implementation of IPE in their graduate curriculum, and potential benefits of working in a team. Also, after the workshop, the students were asked to complete a written evaluation of the IPE experience (Appendix A). The written evaluation included questions asking to rate their comfort level interacting and providing services to transgender individuals and of the overall IPE experience. The survey consisted of a total of 37 items rated on a 5 point Likert scale (1 = strongly agree, 5 = strongly disagree) from the *RIPLS* and *IPAS*. Because the *IPAS* uses questions originally found on the *RIPLS*, nine duplicate questions were eliminated.

An electronic version of the survey was created by the author using an online survey software *Qualtrics* (Qualtrics, 2018). A week before the training, students were asked to take the pre-test survey, which was delivered via an email link by their relevant professor, who was members of the IPE Task Force. To maintain confidentiality, each participant was randomly assigned a number, which they entered before answering pre- and post-test surveys. This number was used to match pre- and post-test responses.

After the workshop, participants were asked to complete the online post-test survey using an electronic device. After the post-test survey, students completed a written evaluation of the training, which was also based on a 5-point Likert scale and included 3 open-ended questions about their workshop experience (Appendix B). When all data were collected, quantitative and

qualitative information exported from *Qualtrics* into an *Excel* spreadsheet and evaluation forms were kept on a computer and file cabinet locked in the UTEP Research in Bilingual Language Lab.

IPE Workshop

A half-day IPE experience that included all the participating programs was implemented. The IPE experience consisted of a case study of a Transgender female status post a left hemispheric stroke. Members of the Task Force developed and edited a previously existing case study on transgender rights (Mladenovic, & Erdman, 2017) to fit the participating disciplines' scope of practice. The workshop included a guided lecture, case study discussion, and two reflection sessions.

Guided lecture. Because of space constraints, students were divided into in two separate rooms where a brief 15-minute PowerPoint guided lecture on transgender issues in health care was provided. This lecture focused on transgender health disparities and the importance of providing fair and unbiased services to this population. The 15-minute introduction served as basic background knowledge for those students who had not been previously exposed to the transgender population.

Case study discussion. Students were divided into 11 groups with representation from all disciplines in four rooms. Groups were given a 3-page case study with an hour and half to read the case-study thoroughly and answer questions that were included specifically to promote discussion within the group. Each program was in charge of representing and discussing their own expertise with the group. Through discussion, students were expected to arrive at a health-care plan that implemented key elements from all disciplines. During the discussion period,

faculty from participating programs rotated throughout rooms and groups in order to facilitate group discussion and demonstrate faculty commitment to IPE.

Reflection sessions. At the end of the case study discussion session, two structured reflection sessions led by faculty members were held. The first discussion included students from all programs. The discussion included questions (Appendix C) that were aimed at allowing the students to reflect on what they had learned and what benefits they received from this interaction. Furthermore, students were encouraged to answer questions about other disciplines and future directions for the workplace. Students were also given the opportunity to share background from their own disciplines and comment on their own specific interactions within their team.

The second reflection session was conducted by 1-2 faculty from each discipline. Questions (Appendix D) were aimed at allowing the students to reflect on their own expertise in this particular case study, the importance of advocating for their profession, and the importance of well-established respect and communication in a given group. Furthermore, students discussed things they would do differently in their practices now that they had this experience. At the end of the second reflection session, all students were asked to complete the post-test survey online and the written evaluation of the IPE experience.

Data Analysis

A program evaluation was performed from the data collected from the IPE workshop. Data were analyzed using the SPSS Version 20.0 Software. A multivariate analysis of variance (ANOVA) was conducted for both measures (*IPAS* and *RIPLS*) to evaluate potential knowledge increases and potential differences among programs. A qualitative analysis using content analysis (Hseih, & Shannon, 2005) was also conducted for the three-open ended questions at the

end of the survey. The author and an undergraduate research assistant performed a general content analysis and identified common themes and sub-themes from programs' answers.

Chapter 3: Results

IPE Knowledge and Program Differences

A repeated-measures ANOVA was performed for each measure (*RIPLS* and *IPAS*). Average scores for each measure were used as the dependent variable. The between groups independent variable was each program and the within groups variable was time (pre-test and post-test). Results from the *RIPLS* yielded an overall significant change in average scores from pre- to post-test measures, ($F(1,95)= 37.33, p = 0.000, \eta^2=0.282$), but did not reveal statistically significant differences between programs, or a significant interaction ($p > .05$). Results from the *IPAS* also yielded an overall significant change in average scores from pre- to post-test measures ($F(1,92)= 37.42, p = 0.000, \eta^2=0.289$), but also did not reveal statistically significant differences between programs, or a significant interaction ($p > .05$); (Figures 3.1-3.2 and Table 3.1). As seen in Table 3.1, all programs had higher scores at post-test vs. pre-test.

Table 3.1

Mean Scores Pre- and Post-test

Program	RIPLS		IPAS	
	Pre-test (n=108)	Post-test (n=101)	Pre-test (n=108)	Post-test (n=101)
DPT	4.38	4.61	4.49	4.72
MOT	4.43	4.65	4.54	4.67
SLP	4.39	4.71	4.57	4.79
MRC	4.25	4.58	4.55	4.64
MSW	4.70	4.85	4.66	4.79
PharmD	4.42	4.69	4.44	4.71

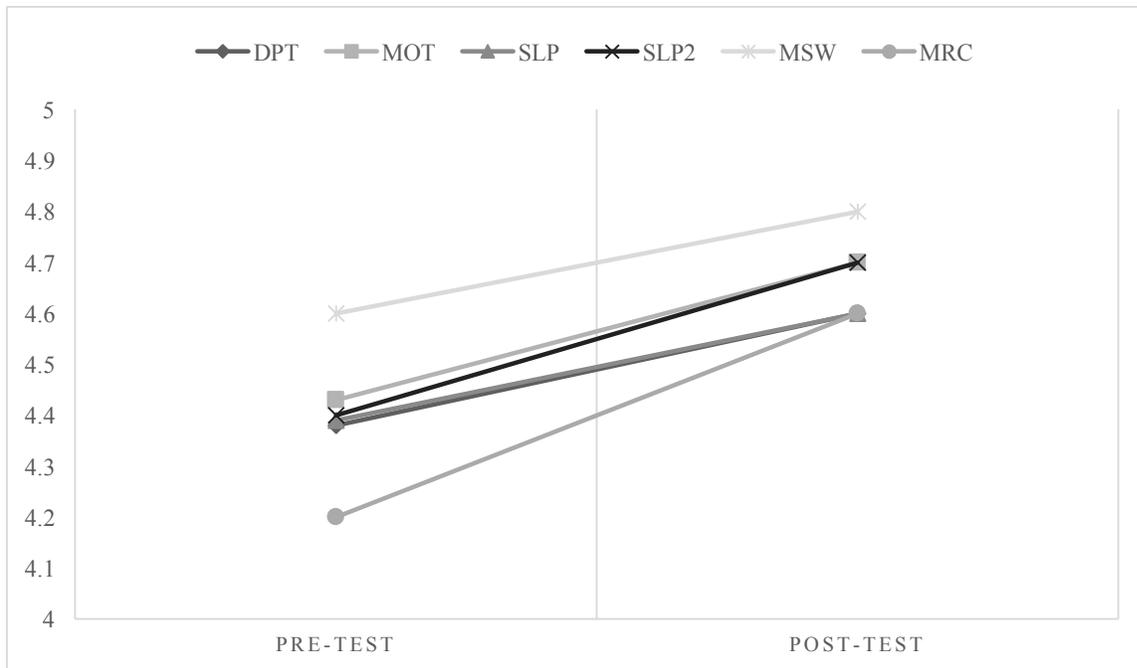


Figure 3.1. Readiness for Interprofessional Learning Scale (RIPLS) pre- and post-test average scores.

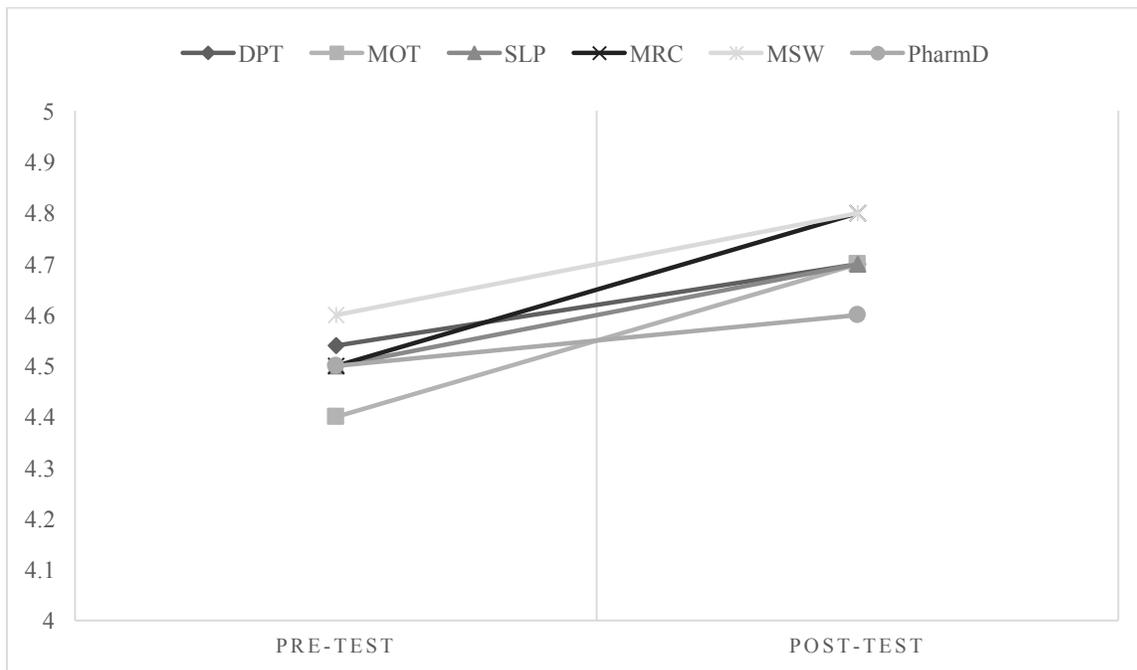


Figure 3.2. Interprofessional Attitudes Scale (IPAS) pre- and post-test average scores.

Content Analysis

Answers from three open-ended questions were analyzed using a content analysis technique (Hseih, & Shannon, 2005). The author and an undergraduate research assistant independently examined responses and identified common themes and sub-themes. They then met to discuss findings, and agreed on emerging themes. Content analysis of qualitative data from the three open-ended questions revealed 4 themes and 2 sub-themes. Table 3.2 lists each theme and sub-theme and provides examples from the data. Students mentioned they hoped to acquire **new knowledge** from the workshop, specifically, knowledge about other disciplines and about their own. Students also mentioned the **need to improve communication among disciplines** and that they hoped to gain more experience in **working as a team** for **better patient-care outcomes**.

Table 3.2

Major Themes and Sub-themes

Major Theme	Sub-theme	Examples
New knowledge	Knowledge about myself/own discipline	<ul style="list-style-type: none">• “Understanding my role in the team.”• “Learning which knowledge I have that other professionals do not have.”
	Knowledge about other disciplines	

Improved communication with other disciplines

- “I would like to better my communication skills with other rehabilitation professionals.”

Working as a team

- “I will learn to communicate better with individuals from other professions.”
- “Team work builds trust, efficiency, and effective communication.”
- “Being able to work together as a team and reducing conflict within the team.”

Improved patient-care

- “Learning more about clinical problems from different perspectives and ultimately being able to provide better quality patient care.”
- “Incorporating how our different roles can become incorporated for the better of the patient.”

Evaluation Responses

Mean scores from all disciplines were determined on the evaluation responses for each program. Table 3.3 shows average scores for each program on questions of interest for this pilot project. Appendix B includes all evaluation questions.

Table 3.3

Evaluation Average Scores

Question	Average
----------	---------

This activity provided new knowledge and/or skills	4.72
This activity has contributed to my professional growth	4.78
This activity provided the knowledge and skills to make a difference in my work	4.63
How likely are you to seek out information on IPE on your own as a result of this activity?	4.41
I am personally comfortable interacting with transgender individuals	4.37
I am personally comfortable providing services to transgender individuals even though it may conflict with my personal values and beliefs	4.65

Overall, students rated all parts of the IPE workshop higher than 4 on a 5-point Likert scale (1 = strongly agree, 5 = strongly disagree). Of particular interest are the last two items. Students rated their comfort levels interacting with transgender individuals lower than their comfort levels providing services to this population.

Chapter 4: Discussion

This pilot project evaluated Health Sciences graduate/doctoral programs' potential increases from pre- to post-test measures, as well as different patterns of knowledge and/or experience between programs. An additional purpose of this pilot project was to evaluate whether graduate students' expectations were met after the IPE workshop. Findings from this pilot project will aid in the development of future IPE trainings at UTEP and other universities that wish to follow this model.

Participants increased their knowledge and/or experience of interprofessional relationships after a IPE workshop. All participating programs increased their average scores from pre- to post-test on both the *RIPLS* (Parsell & Bligh, 1999) and *IPAS* (Norris et al., 2015). These findings may point to the benefit of the IPE workshop on participants from all programs involved. Engaging in IPE at UTEP is indeed preparing students for future team-based approach to healthcare which can ultimately improve healthcare outcomes (Reeves et al., 2012).

On the pre-test, participants hoped to acquire new knowledge about themselves and other professions. Furthermore, the participants hoped to learn how to work in a team for better patient care. On the evaluation, students rated various aspects of the effectiveness of the training between 4.5 and 4.8 (1=lowest, 5 = highest) on the evaluation form. Specifically, participants regarded the IPE workshop as an effective use of their time which provided new knowledge and/or skills and contributed to their professional growth.

Furthermore, participants were also exposed to transgender health disparity issues, they worked through the case-study asking for expertise from other participants. Overall, their personal comfort level interacting with transgender individuals was rated as 4.5 and their comfort level providing services to this population was rated as 4.7. This is of significance as the

transgender population continues to be underserved. As Hasnian et al. (2012) suggested, students should be exposed to the needs of vulnerable populations. This workshop successfully exposed students to transgender health issues and was an overall great opportunity as curricula often does not focus on these issues. Exposing students to this population as an IPE experience was beneficial and cost-effective as the training lasted 3 hours and impacted participants' knowledge of IPE and transgender health issues.

While we cannot account for the participants' previous experience in IPE, the results showed improvement in average scores specifically after the workshop. It is interesting to note that programs did not exhibit different patterns of knowledge and/or experience with IPE in either groups based on the results from both assessment measures. At the time of this specific workshop, participating students from SLP, DPT, and MOT already had previously participated in another IPE experience. Also, programs such as pharmacy and social work require active interaction with other professions, which may also account for high pre-test scores on both measures. Furthermore, all participants were at least in their second semester of graduate school, which may have impacted their IPE knowledge previous to this workshop. Another factor to take into consideration is the participants' undergraduate background. Not all students come from undergraduate degrees that were the same as their graduate programs. (e.g., SLP; UTEP currently does not offer a communication disorders bachelor's degree), and thus many students entered their graduate/doctoral programs with different undergraduate experiences. These experiences may have exposed them to other disciplines and impacted pre-test results.

Similarly, to other IPE studies conducted at UTEP, the greatest lesson learned was the benefit of the IPE experience to participants (Summers, Gonzales, & Pechak, 2015; Pechak, Summers & Velasco, in press). Overwhelmingly, students were very engaged throughout the 3-

hour experience. Students from all programs willingly shared their own expertise with each other and were respectful to each other's points of view. Groups needed little facilitation from faculty members during the case study discussions and comments were plentiful during the reflection sessions. Comments reflected new knowledge about other professions and about their own role on interprofessional teams. Students mentioned the importance of communicating in the work force, and recognized the need to ask for help/expertise from other disciplines when warranted.

Future Work

Aside from the benefits to the students and faculty, some challenges presented themselves. Not all programs had been exposed to terminology and issues for transgender populations in their programs. In the future, the IPE Community of Practice would like to provide a short module for students to complete in advance of the event about the background of the case. Other challenges, as mentioned in the literature, centered on scheduling, communication, and coordination within the IPE Community of Practice. Future plans include institutionalizing our IPE events. This first event was planned over the period of 10 months of biweekly meetings. Now that a system is in place, the IPE Community of Practice is prepared to move forward with future events implementing some changes. Furthermore, it would be beneficial to have regular yearly dates of these events so that students have advanced notice and plan ahead of time.

Another lesson learned was that the survey was lengthy. The extensiveness of the survey may have impacted the participants' answers by the selection of the same answer for multiple questions. This pilot project only accounts for the immediate results of the training, and does not address sustained gained knowledge over time. It would be interesting to follow the pilot project

participants over time, and see if their answers negatively or positively change, and ask whether this training helped them in their workplace.

Results from this pilot project inform future IPE trainings. Future evaluation should take a closer look at the survey items, and eliminate those that are similar in nature in order to minimize the time it takes participants to complete the survey. Furthermore, this pilot project only investigated the knowledge and differences of six disciplines within the College of Health Sciences and School of Pharmacy. Other professions such as nursing could potentially influence the results from this pilot project and play an important part in interprofessional education.

Most importantly, the College of Health Sciences, School of Nursing, and School of Pharmacy should continue to establish IPE trainings as a regular part of the curricula every year. With this, the development of best strategies for IPE trainings can be disseminated to other universities for use as a model (Abu-Rish et al., 2012). The development of such trainings can in turn create literature that can further prove the importance of IPE (Reeves et al., 2012).

Conclusion

Findings from this pilot project are of importance for Health Sciences faculty whom are working towards the implementation of IPE activities within their curricula. The present pilot project demonstrates the effectiveness and positive results of IPE. To better implement IPE, it is important to consider students' existing knowledge and the differences in graduate programs. These considerations can inform the overall content of IPE trainings that are both appropriate for less experienced students and challenging for more advanced students (Johnson et al., 2015). Those students with IPE experience can be of great help in planning and implementing IPE as they offer valuable insights based on their previous experiences. It is important to structure IPE around the four IPEC Core Competencies so that students are trained to work together for safe

and better patient-centered health care service (IPEC, 2016). Universities such as UTEP, who offer Communication Disorders degrees, must take a steps to incorporate IPE into their curriculum in compliance with ASHA's strategic pathway to excellence. With the help and commitment of faculty from different programs, IPE can be implemented into curricula, and thus prepare students to be effective members of an interprofessional team for improved health care services. The findings from this pilot project suggest IPE workshops and/or trainings yield positive results and are beneficial for students in Health Sciences programs.

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Appendix

Appendix A. IPE Survey

Please rate the following statements about the training with **1 being the lowest and 5 the highest rating**

	5	4	3	2	1
Learning with other students will help me become a more effective member of a health care team					
Patients will ultimately benefit if health-care students worked together to solve patient problems					
Shared learning with other students/professionals will increase my ability to understand clinical problems					
Communications skills should be learned with other students/professionals					
Team-working skills are vital for all students/professionals to learn					
Shared learning will help me to understand my own professional limitations					
Learning between students/professionals would improve working relationships					
Shared learning will help me think positively about other students/professionals					
For small-group learning to work, students/professionals need to respect and trust each other					
I don't want to waste time learning with other students/professionals					
It is not necessary for students/professionals to learn together					
Clinical problem solving can only be learned effectively with students/professionals from my own discipline					

Shared learning with other students/professionals will help me to communicate better with patients and other professionals

I would welcome the opportunity to work on small group projects with other students/professionals

Shared learning and practice will help me clarify the nature of patients' or clients' problems

Shared learning before and after graduation will help me become a better team worker

The function of nurses and therapists is mainly to provide support for doctors

I am not sure what my professional role will be/is

I have to acquire much more knowledge and skill than other students/professionals in my own discipline

Establishing trust with my patients is important to me

It is important for me to communicate compassion to my patients

Thinking about the patient as a person is important in getting treatment right

In my profession, one needs skills in interacting and cooperating with patient

It is important for me to understand the patient's side of the problem

Students/professionals from other disciplines have prejudices or make assumptions about me because of the discipline I am studying

I have prejudices or make assumptions about students/professionals from other disciplines

Prejudices and assumptions about students/professionals from other disciplines get in the way of delivery of health care

It is important for health professionals to:

Respect the unique cultures, values, roles/responsibilities, and expertise of other students/professions

Understand what it takes to effectively communicate across cultures

Respect the dignity and privacy of patients while maintaining confidentiality in the delivery of team based care

Provide excellent treatment to patients regardless of their background (e.g. race, ethnicity, gender, sexual orientation, religion, class, national origin, immigration status, or ability)

It is important for health professionals to:

Work with public health administrators and policy makers to improve delivery of health care

Work on projects to promote community and public health

Work with legislators to develop laws, regulations, and policies that improve health care

Work with non-clinicians to deliver more effective health care

Focus on populations and communities, in addition to individual patients, to deliver effective health care

Be advocates for the health of patients and communities

Adapted from *RIPLS & IPAS* (Parsell & Bligh, 1999; Norris et al., 2015)

Open ended questions

1. What benefits do you anticipate from participating in interprofessional trainings?
2. What benefits do you anticipate from working in a team?
3. Do you prior experience working with team-based care in a clinical environment?

Please describe.

(Johnson et al., 2015)

Appendix B. Interprofessional Education Activity Evaluation

Please rate the following statements about the training with **1 being the lowest and 5 the highest rating**

	1	2	3	4	5
Registration process was easy.					
This activity provided new knowledge and/or skills.					
This training was an efficient use of my time.					
This activity has contributed to my professional growth.					
This activity provided the knowledge and skills to make a difference in my work.					
The content of this activity was interesting to me.					
The content of this activity was related to my work.					
The activity environment was conducive to learning.					
The activity environment was conducive to idea sharing.					
The facility was appropriate venue for this activity.					
The faculty were clear in their instructions.					
The faculty demonstrated expertise in this topic.					
The instructional material was well developed and organized.					
The instructional material and teaching strategies were appropriate for this activity					
How likely are you to seek out information on Interprofessional Education on you own as a result of this activity?					
I am personally comfortable interacting with transgender individuals.					
I am personally comfortable providing services to transgender individuals even though it may conflict with my personal values and beliefs.					

Appendix C. Guided Group Reflection Session Questions

1. What new knowledge have you gained about the expertise and roles of other health professions? Provide at least three examples
2. How did this exercise help you understand your own responsibility as a member of an interdisciplinary team?
3. What new knowledge have you gained about the expertise that members of your profession offer and your role on an interdisciplinary team?

Appendix D. Guided Individual Reflection Session Questions

1. What roles and responsibilities are unique to your profession in your interaction with Natalia?
2. How could biases and prejudices of the provider(s) treatment influence their interaction(s) with the patient?
3. What are your ethical responsibilities to Natalia regardless of the provider(s)' biases and prejudices?
4. What supports can you offer from your professional knowledge or referrals to help Natalia explore her strengths, skills and resources?

Vita

Joanna Velasco was born in El Paso, Texas and raised in Ciudad Juarez, Chihuahua as the second daughter of Cecilia and Sergio Velasco. At the age of eleven she moved to El Paso and learned English as a second language. In 2010 she graduated from El Dorado High School. In the Fall of 2014 she transferred to the University of Texas at El Paso (UTEP) and began her undergraduate studies in Pre-Speech Language Pathology. Joanna worked as a research assistant under the mentorship of Dr. Connie Summers and was awarded the Summer Undergraduate Research Program Assistantship by the UTEP Campus Office of Undergraduate Research Incentives.

In the fall of 2016 she was admitted to the Master of Speech Language Pathology Program and was awarded a scholarship funded by the Department of Education titled *Preparing Bilingually Certified Speech Language Pathologists*. That same fall she presented her research at the UTEP Graduate Student Expo and at the American Speech Language Hearing Association (ASHA) annual convention in Philadelphia, Pennsylvania. In the summer of 2017 she was awarded a travel grant by the National Institute of Health to present at the annual Symposium on Research in Child Language Disorders in Madison, Wisconsin. In the fall of 2017 she again presented her research at the ASHA annual convention in Los Angeles, California.

During her time as a graduate student, Joanna was part of the UTEP IPE Community of Practice and served as the National Student Speech Language and Hearing Association President from 2016-2018. Joanna has been recognized as an Outstanding Student by the Program's Chair/Director.

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