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Paramby, T, Rowe, VT, Roofe, N, Landry, A, Wright, J. (2019). Interprofessional Education in the Context of Feeding and Swallowing. *Health, Interprofessional Practice & Education* 3(4).

Available at: <https://doi.org/10.7710/2159-1253.1177>

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HIPE is a journal published by Pacific University | ISSN 2641-1148

# Interprofessional Education in the Context of Feeding and Swallowing

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## Abstract

**Introduction** Speech-language pathologists, occupational therapists, and registered dietitian nutritionists are intricately involved in the management of feeding and swallowing disorders. An interprofessional education (IPE) event was held with graduate level students from these disciplines as an opportunity to practice professional collaboration around the topic of food intake. The purpose of this study was to assess the change in these healthcare students' perceptions of interprofessional collaboration following the interactive IPE event to determine the benefits of incorporating IPE into the curriculum. **Methods** 128 students, across three healthcare disciplines (speech-language pathology, occupational therapy, and dietetics), participated in an online survey before and after the IPE event regarding their attitudes toward interprofessional healthcare teams. The IPE event focused on feeding and swallowing, included lectures from professors representing each discipline, and featured an interactive lab portion highlighting the role each discipline plays in the treatment of feeding and swallowing disorders. **Results** Overall, students' perceptions of interprofessional collaboration across all three departments significantly increased after the IPE event, suggesting that students considered the IPE event to be a beneficial experience. Considerable improvement was noted on questions regarding the individual role and others' roles in an interdisciplinary setting. **Conclusion** These findings suggest that formal IPE events improve students' perceptions and understanding of how a collaborative team works together using each discipline's scope of practice.

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Received: 01/16/2019 Accepted: 05/20/2019

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## Introduction

Interprofessional education is a facet of academia in healthcare professions that may improve overall quality of healthcare by training students to provide collaborative client care in an interdisciplinary environment (Buring et al., 2009). Interprofessional education (IPE) occurs when two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes (World Health Organization [WHO], 2010). Speech-language pathology (SLP), occupational therapy (OT), and dietetics are a few of the many professions involved in the diagnosis and treatment of patients across the lifespan. These professions are both dependent upon and relied on to compose a comprehensive plan of action for patients.

While interprofessional practice (IPP) is an essential component of the health professions, healthcare providers have reported a lack of training in working with and learning about other professions before entering a work setting. An IPP survey in 2016 reported that 72% of participating audiologists and 89% of participating SLPs had engaged in IPP in their primary work setting in the past 12 months (American Speech-Language-Hearing Association [ASHA], 2016a). However, the majority of respondents (71%) stated they had not had formal education or training in IPP (ASHA, 2016a). Another study of health professionals found that IPE concentrated on teamwork behaviors and abilities, which may contribute to the future translation of positive IPP (Ketcherside, Rhodes, Powelson, Cox, & Parker, 2017). These studies indicated that formal education (such as IPE) to prepare healthcare workers in IPP may be an integral part of effective care in the health professions.

The need for integration and coordination of healthcare delivery in dealing with the rising incidence of chronic diseases, the complexity of the healthcare system, and the use of technology in healthcare are the driving forces behind the current IPE movement (Page et al., 2012). Interprofessional education and training are imperative to promote effective IPP and collaboration. IPE initiatives provide several opportunities to supplement higher education, ensuring that IPE is a sustainable method of practice and education of health professions. Some of these initiatives include: enhanced professional skills for graduate students who will be

working intimately with other professions; improved standards of clinical education by implementing client-centered practice in a collaborative environment before entering the workforce; and opportunities for emergent and evidence-based practice for faculty across a campus and within the community (Gray et al., 2015). The Triple Aim for healthcare further reinforces the importance of IPE. This Triple Aim is a model outlining a generalized approach to improve the U.S. healthcare system through the domains of quality (the delivery of safe and effective care by healthcare teams as well as patient outcomes); cost (total cost and measures of the utilization that drives costs); and experience (not only patients' experiences but also those of providers working in interprofessional teams) (Brandt, Lutfiyya, King, & Chioreso, 2014). To improve healthcare services, IPE must be promoted across all healthcare professions.

Formal IPE activities have been implemented in professional healthcare programs across the country and have demonstrated positive results using a variety of outcome measures. Some healthcare programs have extended the need for education in collaborative practice as far as requiring it as part of accreditation in their respective professions, including programs in OT. The American Occupational Therapy Association (AOTA) states that to be an accredited program, curriculum must include opportunities for students to learn how to "effectively communicate, coordinate, and work interprofessionally with those who provide services to individuals, organizations, and/or populations in order to clarify each member's responsibility in executing components of an intervention plan" (Accreditation Council for Occupational Therapy Education [ACOTE], 2018). This stated requirement is necessary in OT programs at the entry level of education and is indicative of a nationally recognized need by AOTA that IPE is an essential facet of curriculum when training future OTs (Gray et al., 2015). Other healthcare programs have also required exposure to collaborative practice as part of accreditation of programs, including nursing, medicine, pharmacy, and physical therapy (PT). The Academy of Nutrition and Dietetics has adopted a similar stance regarding interprofessional education, stating that IPE is an "essential component" of didactic dietetics education (Hark & Deen, 2017). Likewise, the American Speech and Hearing Association (ASHA) adopted the World Health Organization's stance on interprofes-

sional education and has illustrated the benefits of IPE and IPP, especially in providing effective treatment to clients (WHO, 2010). The Council on Academic Accreditation for Speech-Language Pathology states in its 2017 standard that accredited programs must provide content and opportunities for students to learn so that each student can demonstrate professional practice competencies such as: accountability, professional duty, and collaborative practice (Council on Academic Accreditation in Audiology and Speech-Language Pathology, 2019).

The integration of IPE in the curriculum of health-care programs has produced positive results regarding student perceptions of collaborative practice for effective patient care. A four-year study was conducted to investigate the use of IPE which exposed SLP students to collaborative practice with other experts within the context of treating English language learners, specifically those who demonstrate a language disorder (Rosa-Lugo, Mihai, & Nutta, 2017). The Colleges of Health and Public Affairs, Education and Human Performance, and Arts and Humanities collaborated to provide interdisciplinary courses across the master's program for SLP. Of the 40 students who participated in this study, all students reported that the program provided a foundation for their work as SLPs with English language learners (Rosa-Lugo, Mihai, & Nutta, 2017). Another example of an early IPE activity in healthcare curriculum found that when physical therapy and occupational therapy students introduced medical school students to their professional roles and responsibilities, the experience resulted in clarifying the awareness of individual roles and the need for advocacy (Dunleavy, Galen, Reid, Dhar, & DiZazzo-Miller, 2017).

### **Students' Perceptions of Interprofessional Clinical Education (SPICE)**

A study at Texas Tech University Health Sciences Center measured changes with a newly developed instrument, the Students' Perceptions of Interprofessional Clinical Education (SPICE). Medical students and pharmacy students completed the SPICE instrument before and after the IPE clinic, which had portions led by each discipline (Zorek et al., 2014). Factors analyzed with the SPICE include: interprofessional teamwork and team-based practice, roles/responsibilities for collaborative

practice, and patient outcomes from collaborative practice. For all students, significant mean score increases were observed for role clarity and "others' roles," the impact of teamwork on patient satisfaction, and ideal curricular location for IPE. Furthermore, significant increases were observed for all three factors: teamwork, roles/responsibilities, and patient outcomes (Zorek et al., 2014). This study demonstrated the SPICE instrument's ability to successfully measure changes in perception for medical and pharmacy students exposed to an IPE experience, both at the individual item level and at the factor level.

### **Student Perceptions of Interprofessional Clinical Education-Revised (SPICE-R)**

Faculty from the University of Wisconsin-La Crosse Health Professions Department utilized a revised version of the SPICE for an interprofessional lecture and simulation that was conducted in 2015 with students of occupational therapy, physical therapy, and physician assistants. The program was implemented with a goal to engage in a systematic process to design, instruct, and assess learning outcomes related to IPE of 85 health profession students (Gronwaldt, Johnson, Sieck, & Thorman, 2015). The objective of the study was that, students from the health professions would begin to demonstrate core competencies for the following interprofessional collaborative practices: values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams/teamwork. Before and after the IPE learning activity sessions, students anonymously completed the Student Perceptions of Interprofessional Clinical Education-Revised (SPICE-R) instrument online. Ninety seven to one hundred percent of the students reported that the learning activity helped them understand the need for effective communication among healthcare professionals, the need for interprofessional collaboration, and the roles of OT, PA, and PT. Thus, the SPICE-R was a valuable tool to help indicate that students' valued interdisciplinary education (Gronwaldt et al., 2015).

### **Purpose of this study**

While Communication Speech Disorders (CSD) programs throughout the country have implemented IPE into curriculum, only two programs have reported targeted feeding and swallowing disorders as the focus

of instruction and interdisciplinary collaboration (Prelock, 2013). Of those two programs, neither involve the roles of OT, dietetics, and SLP when treating swallowing and feeding disorders. The involvement of all three of these professional programs maintain roles integral to the treatment of feeding problems and require collaborative work to provide a patient with comprehensive care that is more effective and beneficial. No studies at this time have been published regarding IPE with speech, occupational therapy, and dietetics when treating swallowing and feeding disorders.

This report describes the implementation of an IPE lecture and lab through the College of Health and Behavioral Sciences at the University of Central Arkansas (UCA). Students pursuing master's degrees in the fields of SLP, OT, and dietetics collaborated on the topic of feeding and nutrition. Speech-Language Pathologists play a role in professional practice in the areas of communication and swallowing across the lifespan (ASHA, 2016b). Occupational Therapists help people across the lifespan participate in the things they want and need to do through the therapeutic use of everyday activities (occupations), such as feeding oneself (American Occupational Therapy Association [AOTA], 2018). Registered Dietitians have the role of directing and coordinating safe, timely, person-centered care for the delivery of quality food and nutrition services (American Dietetic Association [ADA], 2006). These scopes of practice complement one another and allow for healthcare providers to ensure each component of a patient's condition regarding eating, swallowing, and nutrition is assessed and treated with a client-centered focus. The interactive experience provided by this IPE event was an opportunity for students to practice professional collaboration around the topic of food intake, which is best addressed in professional practice by an interdisciplinary team. This study aimed to assess the change in healthcare students' perceptions of interprofessional collaboration following an IPE event to determine benefits of incorporating IPE into the curriculum by using the SPICE-R as a tool of measurement.

## Method

### *Participants*

Graduate students over two academic years (2016-

2017) participated in this event from the UCA departments of Communication Sciences and Disorders, Occupational Therapy, and graduate level dietetic interns from the Department of Family and Consumer Sciences. Students from each department volunteered to participate in an online survey regarding their attitudes toward interprofessional healthcare teams and a more team-based approach to patient care before and after the IPE event. Participating students consented to their answers being used for this study, which was approved by the university's institutional review board.

### *Measurement*

The SPICE-R was utilized as a self-report measure to determine the impact of the IPE event on students who participated, and it included factors of interprofessional teamwork, team-based practice, roles and responsibilities for collaborative practice, and patient outcomes from collaborative practice. The SPICE-R is a 10-question, 5-point Likert scale that was developed for and validated with a general population of health profession students (Zorek et al., 2014). It is designed to assess teamwork and team-based practice (6 questions), roles and responsibilities (2 questions), and patient outcomes from collaborative practice (2 questions). The SPICE-R instrument has been shown to be both reliable and valid (Zorek et al., 2014).

### *Procedure*

Participants completed the SPICE-R as a pre-test to assess their perceptions of interprofessional collaboration before a lecture that was presented by professors from each of the three departments. In a lecture, a professor from each department shared information about how their profession addresses eating, swallowing, and nutrition and explained how their profession's scope of practice complemented other health professions in attendance. Each discipline reinforced the importance and benefits of collaboration using a team-based approach for patient care. The lecture concluded with an open-forum setting for questions from the students.

The second portion of the IPE event was a lab with a section moderated by a professor from each of the three departments involved. The dysphagia lab was led by the professor from the Department of Communication



Sciences and Disorders. The lab was set up into stations which held small groups of students with representatives from each department in each group. The students rotated between stations. Each station had an activity for the students to prepare and an opportunity to taste a variety of thickened liquids of different consistencies and in different beverages. The purpose of the dysphagia lab was for students to gain a better understanding of how a patient with dysphagia might feel when restricted with diet modifications and educate students in how to prepare thickened liquids with various consistencies. Through this simulation, students worked collaboratively to gain a perspective of how a patient might feel and respond to an altered diet.

The occupational therapy portion of the lab was led by the professor from the Department of Occupational Therapy, who introduced a variety of assistive devices for feeding. Students partnered with students from different disciplines and problem-solved through brief case studies. Medical diagnoses and symptoms varied from group to group. Simulation devices such as restrictive vision goggles (decreased vision), weighted cuffs (hemiparesis), and large gloves (decreased fine motor coordination), were utilized to assist students in understanding the implications of various diagnoses that impact feeding. Students were asked to discuss their case study with their partner and choose which assistive eating devices would be the most beneficial to their "client." Students then presented their case study to their peers and explained their rationale for the specific assistive technology chosen. This exercise provided insight to students across disciplines of the potential benefits of the equipment that OTs can provide for clients with a diverse range of difficulties. Students also experienced feeding each other and being fed by someone else. A discussion followed pertaining to the aspects of feeding that should be adhered to, such as positioning, communication, amount and timing of food, and drink presented.

A nutrition and dietetics professor from the Department of Family and Consumer Sciences led the nutrition portion and discussed with students the potential benefits of thickened liquids and how the dietitian must remain conscientious of potential adverse effects of treatment, such as dehydration and inadequate nutrition based on the restrictions of the client's diet. A variety of food molds were demonstrated. The molds

could be used to mimic the appearance of typical foods that have been pureed to suit dietary restrictions, which can be used as a visual cue to the patient to make pureed foods more appetizing. The purpose of this portion of the lab was for students to understand a registered dietitian's role in treatment of swallowing disorders, specifically in modifying restricted diets to be more palatable for the patient. Together, all disciplines discussed the pros and cons of various modified diets and how the disciplines can collaborate to create the best diet and feeding environment for the client.

Following the lab portion, students were asked to fill out a post-test online survey to evaluate their perceptions of IPP and education using the SPICE-R. Comments on the students' impressions of the event were also elicited.

## Results

A total of 128 students completed both the pre- and post-10-item SPICE-R instrument. Of those 128 students, 51 were from the Communication Sciences and Disorders Department, 56 were students in the Occupational Therapy Department, and 21 were students from the Dietetics Internship in the Department of Family and Consumer Sciences. The overall reliability of this study was determined highly reliable (Cronbach's  $\alpha = 0.904$ ). A paired t-test was utilized to compare student's perceptions before and after the IPE lab. One outlier was present in a survey from a student in the CSD program and was deleted from the analysis. Results of students' surveys are shown in Table 1 and broken down by department in Table 2 to demonstrate the sum of change in scores from pre-test to post-test SPICE-R and significance of change.

In scores from all three departments, 8 out of 10 questions demonstrated a significant increase in pre- vs. post-survey (Table 1). The other 2 questions, questions 3 and 6, exhibited an increase from pre-survey to post-survey but were not considered significant.

From students in the CSD Department, an increase in pre- to post-survey questions was observed, and 5 of 10 were significant. The Occupational Therapy Department also exhibited an increase in scores across all questions of the survey, with 8 out of 10 considered significant. A decline was observed in the dietetics

**Table 1.** Pre-and Post-SPICE-R Survey Item Means and Standard Deviations. \* $p < .05$ , \*\* $p < .01$ 

Survey Item	SPICE-R Pretest item mean $\pm$ Std. Dev.	SPICE-R Posttest item mean $\pm$ Std Dev.	p-value
Working with students from another profession enhances my education.	4.52 $\pm$ 0.62	4.67 $\pm$ 0.74	0.045*
My role within the interdisciplinary team is clearly defined.	4.13 $\pm$ 0.75	4.52 $\pm$ 0.75	0.000**
Health outcomes are improved when patients are treated by a team that consists of individuals from two or more health professions.	4.69 $\pm$ 0.59	4.78 $\pm$ 0.61	0.202
Patient satisfaction is improved when patients are treated by a team that consists of individuals from two or more health professions.	4.33 $\pm$ 0.80	4.69 $\pm$ 0.68	0.000**
Participating in educational experiences with students from another health profession enhances my future ability to work on an interprofessional team.	4.52 $\pm$ 0.69	4.69 $\pm$ 0.67	0.029*
All health professional students should be educated to establish collaborative relationships with members of other health professions.	4.60 $\pm$ 0.60	4.75 $\pm$ 0.64	0.063
I understand the roles of other health professionals within an interprofessional team.	3.83 $\pm$ 0.80	4.46 $\pm$ 0.73	0.000**
Clinical rotations are the ideal place within their respective curricula for health professional students to interact.	3.94 $\pm$ 0.88	4.26 $\pm$ 0.92	0.001**
Health professionals should collaborate on interprofessional teams.	4.58 $\pm$ 0.58	4.77 $\pm$ 0.60	0.012
During their education, health professional students should be involved in teamwork with students from other health professions in order to understand their respective roles.	4.45 $\pm$ 0.70	4.75 $\pm$ 0.64	0.000**

**Table 2.** Comparisons of Change Scores Between Pre- and Post-test SPICE-R Results of Each Discipline \* $p < .05$ , \*\* $p < .01$ 

Survey Item	CSD Change score n=51	OT Change score n=56	Dietetics Change score n=26
Working with students from another profession enhances my education.	0.25*	0.28**	-0.38
My role within the interdisciplinary team is clearly defined.	0.51**	0.27*	0.48
Health outcomes are improved when patients are treated by a team that consists of individuals from two or more health professions.	0.18	0.09	-0.10
Patient satisfaction is improved when patients are treated by a team that consists of individuals from two or more health professions.	0.23	0.51**	0.24
Participating in educational experiences with students from another health profession enhances my future ability to work on an interprofessional team.	0.14	0.3**	-0.10
All health professional students should be educated to establish collaborative relationships with members of other health professions.	0.12	0.28*	-0.14
I understand the roles of other health professionals within an interprofessional team.	0.86**	0.43**	0.57
Clinical rotations are the ideal place within their respective curricula for health professional students to interact.	0.47**	0.21	0.23
Health professionals should collaborate on interprofessional teams.	0.19	0.22*	0.09
During their education, health professional students should be involved in teamwork with students from other health professions in order to understand their respective roles.	0.29*	0.33**	0.19

students on questions 1, 3, 5, and 6, but none of the four questions were considered significant in their regression ( $p < .05$ ). There was no significant positive change in pre- vs. post-test SPICE-R in the department of Family & Consumer Sciences dietetic interns.

## Discussion

The purpose of this study was to assess the change in healthcare students' perceptions of interprofessional collaboration for feeding and swallowing following an IPE event to determine benefits of incorporating IPE into the curriculum by using the SPICE-R as a tool of measurement. Overall, students' perceptions of interprofessional collaboration across all three departments significantly increased after the IPE event suggesting that students considered the IPE event to be a beneficial experience. Considerable improvement was noted on questions regarding the individual role and others' roles in an interdisciplinary setting (questions 2 and 7). These findings suggest that formal IPE events, like the lecture and lab presented, would improve students' perceptions and understanding of how a collaborative team works together using each discipline's scope of practice.

Students appeared to come to the IPE event with some value of interdisciplinary collaboration. Questions regarding whether working with other professions enhances IPE and IPP (questions 1, 5, 6, 9, 10), had a less significant difference between pre- and post-survey than questions regarding one's role on an interprofessional team. However, all questions indicated had high pre-survey scores prior to the event (average 4.5 or higher). This suggests that prior to the event, students understood the necessity of collaborating with other disciplines.

Results on the pre-survey indicated that students knew that they would be working with professionals outside of the discipline but suggested that students did not have prior knowledge in how the roles of an interdisciplinary team would interact and contribute to client-centered treatment. This data suggests that even students who understand the need for collaborative work in a professional setting may still benefit from IPE events, as it may serve to define roles between professions and illustrate how those professions may work together.

Comments from students reinforce the interpretation of this data and suggest that the topic of feeding and

swallowing was beneficial to students in OT, CSD, and Dietetic programs to learn as a cohort. One student stated, "I enjoyed getting to work with other students to help define our roles within an interprofessional team." Another student commented, "I enjoyed learning how each member of the team comes together to help the client." When asked, "Tell us about your favorite part of the IPE lab experience. What was your favorite part and why?" 62 students from all three departments commented that they most enjoyed learning from other disciplines in the treatment of feeding and swallowing disorders.

An overall increase of scores from the pre-survey to the post-survey paired with positive feedback from the students indicates that other universities may benefit by introducing formal IPE events between CSD, OT, and nutrition for feeding and swallowing into their curriculum for healthcare professions. This also indicates that the SPICE-R is an instrument sensitive to changes in student perceptions of IPP. A potential limitation of this IPE event was the uneven number of students in various programs and the lengths of time in which students had been in clinical rotations. For example, dietetic interns had been in their graduate program for only 6 months but had completed 3 months of clinical work while OT and SLP students were further along in their graduate programs but did not have the same level of onsite practice. Additionally, some students in OT were nutrition majors as undergraduates and may have already felt comfortable with the information provided. For future labs, there will be a more comprehensive session from the nutrition department, as it provided the shortest lab section of the three disciplines that were represented. Despite this limitation, students reacted positively to all sections of the IPE lab. Practicing collaborative work as students matriculate through their respective professional programs reinforces the benefits of IPP and gives students the opportunity to collaborate before entering the field. The unique topic of feeding, swallowing, and nutrition appears to be well delivered in an IPE setting.

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