Gaining an Understanding of Interprofessional Roles and Responsibilities Among Pre-Professional Health Students

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Abstract

INTRODUCTION Interprofessional education (IPE) literature at the pre-professional health program level is limited. Exposing students to IPE prior to health professional program matriculation may increase students' understanding of their chosen professions' contributions to the health team as well as the role of other professions on the team.

METHODS Summer Health Professions Education Program (SHPEP) participants from three institutions engaged in a six-week academic enrichment program, which required an IPE component. Prior to engagement in the IPE curricula, SHPEP participants were asked to complete a pre-survey. A component of the survey included the Student Perceptions of Interprofessional Clinical Education-Revised instrument, version 2 (SPICE-R2). Low pre-mean scores for the SPICE-R2 Roles and Responsibilities factor led to an exploratory research design asking participants to complete the following statement *"My role on an interprofessional team is…"* upon completion of the SHPEP program.

RESULTS Nine topic areas were identified from 163 participant statements: 1) contribute to the team, 2) collaborating with the team; 3) lead the team; 4) patient-focus; 5) population health/public health; 6) listen to others; 7) respect contributions of other team members; 8) learn from others; and 9) refer to others.

DISCUSSION Pre-professional health student participant responses were reflective of the U.S. Interprofessional Education Collaborative (IPEC) Roles and Responsibilities, Interprofessional Communication and Values and Ethics competencies.

CONCLUSION Earlier presentation of IPE concepts allows students to develop a more comprehensive view of interprofessional roles. Results of this study demonstrate accurate learning of the IPEC RR competency and support integrating IPE experiences within academic enrichment programs for pre-professional health students.

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Implications for Interprofessional Practice

- Exposure to interprofessional education (IPE) activities at the pre-health professional program level provides students the opportunity to enhance their interprofessional learning.
- Pre-health professional students are able to identify content within the Interprofessional Education Collaborative Roles and Responsibility sub-competencies after engaging in interprofessional experiences.

Introduction

Presently, the interprofessional education (IPE) literature is inconclusive regarding the most appropriate time to integrate IPE in health profession curricula (Hudson et al., 2016). Proponents of early inclusion advocate for IPE prior to students developing stereotypes or strong professional identities within health profession curricula (Langendyk et al., 2015). Exposing students to IPE prior to health professional program matriculation may increase students' understanding of their chosen professions' contributions to the health team as well as the role of other professions on the team. Increasing student knowledge of other professions' roles has the potential to decrease biases or negative stereotypes. Additionally, early exposure to collaborative learning may establish an expectation of active learning from, about, and with others once accepted into a health professional program. However, evidence to these hypotheses is not available as research investigating the introduction of IPE at the pre-professional health program level, prior to acceptance into a health professional program, is limited.

Literature Review

The pre-professional health research has measured pre-post student perceptions of IPE using validated instruments, such as the Attitudes Toward Health Care Teams Scale (Leipzig et al., 2002), the Revised Readiness for Interprofessional Learning Scale (McFadyen, Webster, & Maclaren, 2006) and the Student Perceptions of Interprofessional Clinical Education-Revised instrument, version 2 (SPICE-R2) (Zorek, et al., 2016). All four published articles noted improvement in pre-health student IPE perceptions (Gunaldo, et al., 2018; Dumke, et al., 2016; Dacey, et al., 2010; Hoffman and Harnish, 2007). Three of the four research sites measured a roles and responsibility domain, included in the chosen assessment instrument (Gunaldo, et al., 2018; Dacey, et al., 2010; Hoffman and Harnish, 2007).

Specific to this study, in the summer of 2017, Louisiana State University Health Sciences Center-New Orleans (LSUHSC-NO) asked pre-health students to complete the SPICE-R2, a validated instrument utilized to assess IPE perceptions for early learners enrolled in health professional programs (Zorek, et al., 2016). The SPICE-R2 includes ten questions categorized into three factors: Roles/Responsibilities (RR) for Collaborative Practice (RR), Interprofessional Teamwork and Team-based Practice, and Patient Outcomes from Collaborative Practice (Zorek, et al., 2016). Of the three factors, the RR factor had the lowest mean score for all students. One of the RR questions is "My role within an interprofessional team is clearly defined." The other two SPICE-R2 RR questions were related to an individual's understanding of the training and roles of other health professionals. Given the lower RR factor score from 2017, the aim of this study was to further investigate pre-professional health Summer Health Professions Education Program (SHPEP) student perceptions of their role on an interprofessional team after participating in IPE sessions.

Methods

SHPEP, a six-week summer enrichment academic program, is funded by the Robert Wood Johnson Foundation (RWJF) and directed by the Association of American Medical Colleges (AAMC) and the Ameri-

can Dental Education Association (ADEA) (SHPEP, 2018). A goal of the SHPEP is to increase the diversity of health professionals, specifically targeting underrepresented/underserved individuals from educational and/or socioeconomically disadvantaged communities (SHPEP, 2018). SHPEP participants are undergraduate students classified academically as either freshmen or sophomores interested in medicine, dentistry, and other health fields, and have earned no more than sixty credit hours.

The RWJF requires each site to accept eighty participants per session. Each site develops and implements unique programs to strengthen students' critical thinking skills, study skills, financial literacy, knowledge of basic sciences, and health policy, while improving self-efficacy. IPE was added as a required topic in the 2016 iteration of SHPEP. There were thirteen SHPEP sites in 2017. At the SHPEP grantee meeting where sites planned for the 2018 summer session, three sites discussed an opportunity to collaborate and agreed to collaborate for the purposes of this paper. In 2017, LSUHSC-NO SHPEP site conducted pilot research as a single site, and in 2018 the University of Alabama School of Medicine (UASOM)/ University of Alabama at Birmingham (UAB) and Western University of Health Sciences (Westernu) joined in an effort to strengthen the research in the pre-professional health program arena. Table 1 provides an overview of each sites' partnerships and student interest areas.

Participants

SHPEP participants at the three sites were undergraduate freshmen or sophomores interested in medicine, dentistry, optometry, public health, physical therapy or physician assistant programs. Table 2 provides an overview of SHPEP participants.

University	Partnerships	Student Interest Areas (n)
UASOM/UAB	UASOM/UAB, UASOM/UAB School of Dentistry, UASOM/UAB School of Health Professions (Physician Assistant Program), UASOM/UAB School of Optometry	Medicine (n=40) Dentistry (n=20) Physician Assistant (n=10) Optometry (n=10)
LSUHSC-NO	School of Dentistry, School of Medicine, School of Public Health, Center for IPE	Dentistry (n=20) Medicine (n=40) Public Health (n=20)
Westernu	College of Dental Medicine, College of Osteopathic Medicine, College of Health Sciences (Physician Assistant & Physical Therapy Programs), College of Graduate Nursing, College of Podiatric Medicine, College of Pharmacy, College of Optometry, College of Biomedical Sciences	Dentistry (n=20) Osteopathic Medicine (n=43) Physical Therapy (n=13) Optometry (n=4)

Table 1. *Overview of SHPEP Sites*

University	Accepted applicants	Completed 6 week SHPEP program
LSUHSC-NO, 2017	80	74
UASOM/UAB, 2018	80	79
LSUHSC-NO, 2018	70	68
Westernu, 2018	80	78

Table 2. *Number of Accepted Applicants and Participants of SHPEP by University*

Study Design

In 2017, SHPEP sites were required to have participants engage in an IPE online module created by the U.S. National Center for Interprofessional Practice and Education. In addition, at LSUHSC-NO, students participated in five, two hour IPE sessions over a period of six weeks. One of the IPE sessions was cancelled due to inclement weather. Each session included small group IPE activities.

In 2018, the IPE online module was not made available for use by SHPEP sites. Each site independently developed the IPE component of the program. IPE exposure at LSUHSC-NO included four, two-hour class sessions dedicated to risk factors associated with cardiovascular disease; a rotating weekly high-fidelity simulation case focused on teamwork and cardiopulmonary resuscitation; and a class session for students to present a video they created addressing how an interprofessional team could address cardiovascular disease. Students were organized into teams for each IPE session, where teams represented students with different interests (medicine, dentistry and public health).

IPE exposure at the UASOM/UAB site included twice weekly one-hour lunch lectures, two high-fidelity simulation cases and four two-hour Interprofessional Case Conferences highlighting various interprofessional teams in the health system and community. Interprofessional student teams engaged in high-fidelity simulation cases.

At Westernu, SHPEP scholars experienced IPE through case study didactic experiences, clinical hands on learning, and an online module. The case study didactic component occurred on a weekly basis, where a case was presented to students on Monday, followed by application within a physiology course that transitioned to IPE specific activities and Thursday grand rounds. In addition, students engaged in the online module which reinforced interprofessional interactions in context of the weekly case. Students also rotated through one of seven professional areas for a clinical hands-on learning experience.

The IPE experiences at each university varied based upon institutional resources. All sites focused on the four Interprofessional Education Collaborative (IPEC) competencies: Values/Ethics for Interprofessional Practice, Roles/Responsibilities, Interprofessional Communication, and Teams and Teamwork (IPEC, 2016). At the end of the six-week program, students at each of the three sites were provided an electronic link during class or through email and were asked to complete the following "*Using clear and concise language, complete the following statement in ONE sentence: My role on an interprofessional team is…*".

The open-ended responses were reviewed and categorized utilizing a thematic analysis approach described by Braun and Clark (2006). Limited research in the pre-professional health student population necessitated an initial exploratory step to review the responses and generate a set of initial codes. In the first phase of the analysis the LSUHSC-NO Center for IPE office director and another staff member from the same institution engaged in the SHPEP program, but not in IPE, read the participant data independently and identified five initial codes. The two reviewers then independently re-read the responses, searching for themes. The two reviewers then met to discuss the independently generated themes that emerged from participant responses and agreed upon the use of nine themes. In the next step, each reviewer coded the theme/s present in each response. Differences in coding were discussed and a consensus was reached by the reviewers on the theme/s for each response. A second phase of review was conducted by the Center for IPE office coordinator and the SHPEP program manager at each site to confirm the thematic codes for the participant responses. The second phase reviewers agreed with the nine themes. SHPEP participants were unable to verify themes as the analysis component was conducted several months after the SHPEP ended. The research portion was approved by the LSUHSC-NO Institutional Review Board (IRB) (#9940), the UASOM/UAB IRB (#IRB-300000006) and the Westernu IRB (#X18IRB047).

Results

There were fifty and one hundred thirteen participants in 2017 and 2018, respectively. A total of 163 participants (55%) completed the open-ended statement describing their role on an interprofessional team. Of the 163 participants, 97 (60%) declared medicine as their primary interest area, 36 (22%) declared dentistry, 17

(10%) declared public health, 6 (4%) declared optometry, and 3 declared interest in physician assistant (2%) and physical therapy (2%) as a future profession.

Nine topic areas were identified from 163 statements: 1) contribute to the team, 2) collaborating with the team; 3) lead the team; 4) patient-focus; 5) population health/public health; 6) listen to others; 7) respect contributions of other team members; 8) learn from others; and 9) refer to others. Some statements were reflective of more than one topic area. For example, the participant response "*My role on an interprofessional team is to actively listen and contemplate the different perspectives from various different healthcare professions. I should respect all perspectives and combine them in such a way that it provides the maximum amount of financial and health benefits for the patient*." was coded as reflecting the Patient focus, Listen to others, and Respect the contributions of other team members themes.

Table 3 provides an overview of the nine identified topics with respective percentages of students who incorporated the topic within their statement. Of the 163 statements, one hundred twelve statements were categorized as having a patient-focus. An example of the patient-focus theme is when a student referred to their role as assisting a patient in reaching health goals or improving the health of their patients. For example, one participant wrote "*My role on an interprofessional team is to listen to others and create an efficient plan while still advocating for the health of the patient.*"

Seventy statements were also reflective of collaborating with a team of health professionals. Some of the seventy statements included the patient as a member of the team or included collaborating with health professionals focused on caring for the patient. An example quote includes "*My role on an interprofessional team is to educate as well as learn from my team and work together to deliver the best treatment for the patient.*"

Sixty-four participant statements suggested their role included contributing to the team. Contributions to the team were expressed in terms of sharing knowledge or expertise. One student commented "*My role on an interprofessional team is to utilize my skills and respective specialties to supplement the team in a way that is beneficial and conducive to providing exceptional patient care.*" Eight statements were reflective of a role extending beyond the level of an individual patient and more about the impact on communities or populations, and fourteen participants indicated their role was to lead the team.

	Count			**Percent of Total**		
	LSUHSC-NO	UASOM/UAB	Westernu	LSUHSC-NO	UASOM/UAB	Westernu
Contribute to the team	54	6	4	19%	13%	18%
Collaborate with the team	57	9	4	20%	19%	18%
Lead the team	12	2	0	4%	4%	0%
Population Health/Public Health	8	-	0	3%	0%	0%
Patient focus	88	19	5	32%	40%	23%
Listen to others	26	4	4	9%	8%	18%
Respect contributions of other team members	20	4	1	7%	8%	5%
Learn from others	11	4	2	4%	8%	9%
Refer to others	3	-	2	1%	0%	9%
Total	**279**	**48**	**22**	**100%**	**100%**	**100%**

Table 3. *Themes by Institution and Respective Counts and Percentages*

Discussion

The United States Interprofessional Education Collaborative (IPEC) panel defines the Roles/Responsibility (RR) competency as, "Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations" (IPEC, 2016). The RR competency is further defined by ten RR sub-competencies (IPEC, 2016). Six of the nine defined topic areas in the study were reflective of the IPEC RR sub-competencies. The theme of 'listening to others' is reflective of an Interprofessional Communication (CC) sub-competency (CC4) and 'respecting contributions from other team members' is reflective of a Values and Ethics (VE) sub-competency (VE4). The overlap is not surprising as interprofessional collaboration requires all behavioral domains.

The most common theme in participant statements included a 'patient focus' for all students and by site. Inherent to interprofessional teams is the inclusion of the patient/caregiver. Therefore, another potential benefit of early IPE introduction is realization that the patient/caregiver is an integral member of the health team. Contributions to the team and collaboration within the team were also frequently noted by SHPEP participants. This finding is also positive as participants had an understanding that their professional role contributions are important but differ from their interprofessional role to work together.

Listening to others and respecting the contributions of others were also mentioned by student participants. These themes are integral components for interprofessional collaborative practice, which can be developed over their educational journey as students and eventually health professionals. There were four themes that were not as frequently noted in student statements: 1) lead the team; 2) learn from other; 3) refer to others; and 4) population health. The only site where students mentioned a public health role was LSUHSC-NO, which specifically accepted students with a public health interest.

The SPICE-R2 was not a component of the research study, but initial low scores in the RR factor, in 2017, led to further investigation-post hoc. Even though the students were not at the same academic level, two previous studies also noted the RR factor SPICE-R2 pre-mean score was the lowest in early learner health students (McGregor, Lanning &Lockeman, 2018; Risling-de-Jong, Styron, & Styron, 2016). This trend of the RR SPICE-R2 factor being the lowest among the three factors in pre-health and early professional learners is worth further investigation to determine appropriate content to integrate into future IPE experiences.

It is noteworthy to mention that participant responses to the SPICE-R2 question, "My role within an interprofessional team is clearly defined" showed a statistically significant mean change in score from pre- to post in 2017 and 2018 ($p < 0.05$). Participants' responses to the SPICE-R2 question demonstrated an increased understanding of their interprofessional role post SHPEP program. In addition to quantitative data, participants' expression of their role through an open-ended statement provided a more precise understanding of participant understanding of their role on an interprofessional team after participating in the SHPEP program (Table 3).

IPE perceptions are commonly measured in health professional students using quantitative assessments. Findings from this study contribute to the limited pre-professional health student IPE perception research. Comparative research by Dumke, et al. (2016) and Gunaldo, et al. (2018) reported positive changes in student IPE perceptions after participation in a six-week academic enrichment program. The outcomes of our study contribute to and support the literature regarding the inclusion of IPE perceptions after an academic enrichment program at the pre-professional health level, specifically in the Roles and Responsibilities IPEC domain.

A limitation of the study included varied participation rates among the three SHPEP sites. However, SHPEP participants attended various colleges throughout the United States. The difference in the participation rates inhibited further analysis between SHPEP sites. Future research increasing the number of participants will strengthen the current literature. Furthermore, a larger response rate would allow for IPE perception comparisons across preferred professions and a comparison of outcomes based on similarities and differences in curriculum and learning objectives. In the future, incorporating an open-ended question pre- and post-participation in an academic summer program will provide further insight into student IPE perceptions and learning based

upon the IPE curriculum. Finally, in the research study the open-ended question, asked participants to complete the phrase in one sentence. Asking for a succinct response might have limited the information provided by the participant.

Conclusion

Undergraduate summer enrichment academic programs engaging multiple health programs provide an opportunity for IPE introduction. Prior to matriculation into a health professional program and immersion in professional cultures, IPE experiences have demonstrated to have a positive influence on student IPE perceptions. Earlier presentation of IPE concepts allows students to develop a more comprehensive view of interprofessional roles which focus on teamwork, collaboration, and patient-centered care. Results of this study demonstrate accurate learning of the IPEC RR domain competency and support integrating IPE experiences within academic enrichment programs for pre-health students.

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Declaration of interest

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