Perceptions of Challenges and Methods of Collaboration among Graduate Students

Participating in an Interprofessional Education Simulation

by

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Abstract

Interprofessional education (IPE) is of growing interest for colleges and universities, because it has become a mechanism for training future health professionals to be competent in collaborative practice. The purpose of this study was to explore perceptions of challenges and methods of collaboration among graduate students from six different health profession-related degree programs who participated in an IPE-related simulation. A survey was provided to participants at the end of the simulation. This study used a de-identified dataset omitting student IDs. Theming was used to analyze 143 participant responses to open-ended questions. Each response was coded as only one theme, producing frequencies of themes for all participants and each health profession. The responses were grouped into 10 themes for perceptions of challenges and 13 themes for methods of collaboration. Among all participants, the top three leading perceived challenges were interprofessional collaboration (33.6%), role identification (13.9%), and planning (13.1%). The top three leading methods of collaboration were helping hand (17.9%), sharing ideas (13.6%), and patient identification (12.1%). The different themes provided insight that differences among the simulation experiences of graduate students from six different health professions may exist. Future studies should continue to explore student experiences during simulations. These experiences can help in understanding the effects of IPE on collaborative practice.

Keywords: interprofessional education, collaborative practice, simulation, perceptions of challenges, methods of collaboration

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Introduction

Aspiring health professionals typically obtain a certain level of training from a university or college. Whether at the undergraduate or graduate level, health profession students benefit from the incorporation of interprofessional education (IPE) in their studies. As the complexity of health issues continued to increase, and with the shift from high rates of infectious disease to high rates of chronic disease, the World Health Organization ([WHO] 2010) has stressed the need for IPE and collaborative practice for the betterment of global health. The WHO's call to action requires efforts from all health professions to see positive change. Universities and colleges have offered IPE courses to various combinations of health profession students. A multitude of activities beyond courses have also been used in the academic setting such as IPE simulations. However, limited research exists using qualitative methods to describe the experiences of health profession students participating in IPE courses, especially in IPE simulations.

Interprofesssional Education

Defined

IPE is best defined as two or more professions learning with and from each other as well as learning about their roles for the purpose of efficient collaboration and achieving better health outcomes (WHO, 2010). IPE is a mechanism known for providing effective training to aspiring health professionals (Olson & Bialocerkowski, 2014). IPE is necessary to not only improve everyday patient outcomes but also to have a better prepared workforce during epidemics and disease outbreaks as a means for efficient responses towards stopping the spread of disease (WHO, 2010).

Interprofessional Education Collaboration (IPEC) Development

The goal to get from IPE to interprofessional practice or interprofessional collaboration led to the development of the Interprofessional Education Collaboration (IPEC), an effort comprised of dentistry, nursing, medicine, osteopathic medicine, pharmacy, and public health professionals working together to create competencies for schools to integrate (IPEC, 2016). The four competency areas of IPEC are values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams and teamwork (IPEC, 2016). IPEC was developed as a means to achieve the Triple Aim approach of improving patient care and population health while also reducing health care costs (IPEC, 2016).

The link between education and the healthcare system is inevitable as health professionals are being shaped within universities, colleges, and vocational programs (WHO, 2013). Health professionals require training that considers the ever-changing needs, while also understanding the cultural values and attitudes of the populations being served (WHO, 2013). While competencies differ due to the accreditation standards of each health profession, the WHO (2013) agreed that students must be prepared to collaborate with any health profession. In the academic setting, IPE paves the way for new socialization processes urging, students to become competent in collaborating with other health professionals (Olson & Bialocerkowski, 2014). It cannot be assumed that the same processes will be applicable to all health professions (Olson & Bialocerkowski, 2014). Thus, IPE looks different across the education spectrum and depending on the health professions involved (Olson & Bialocerkowski, 2014).

Purpose of IPE

The purpose of IPE is to provide aspiring health professionals with proper training to be able to work alongside different health professionals through collaborative practice (Abu-Rish et al., 2012). The notion of collaborative practice is essential in modern medicine due to the greater complexity of diseases (Abu-Rish et al., 2012). IPE is being implemented all around the world to not only better equip the health care workforce but to ultimately improve populations' health and patient outcomes (Institute of Medicine [IOM], 2015). It is essential to use the four guiding principles (interprofessional teamwork and team-based practice, interprofessional communication, defined roles and responsibilities for collaborative practice, and values/ethics for interprofessional practice) as methods to build a workforce that is community focused and patient and family centered (IPEC, 2016).

IPE is meant to be a baseline for the minimum competencies the health care workforce needs in order to create significant change in health outcomes (WHO, 2013). By building a workforce that is proficient in collaborative practice, health professionals can adapt to individual needs evolving from culture and geographic location (WHO, 2010). IPE serves a secondary purpose of improving the global health crises through developing a work force with the capacity to adapt to constantly changing health needs (WHO, 2010).

Challenges of IPE

There are different challenges that arise when implementing IPE in the academic setting. The most commonly cited are a lack of framework or theory for IPE (Brisolara et al., 2019), difficulty in obtaining funding for implementation of IPE (WHO, 2013), issues

with technology (Johnson et al., 2019), differences in accreditation status among academic institutions (IPEC, 2016; Johnson et al., 2019; WHO, 2013), organizational culture (Ambrose-Miller & Ashcroft, 2016; Robert Wood Johnson Foundation [RWJF], 2015; WHO, 2013), educational silos (Johnson et al., 2019; Lima et al., 2018), hierarchy (Ambrose-Miller & Ashcroft, 2016), and faculty readiness to implement IPE (Lash et al., 2014). Of these, educational silos, hierarchy, and faculty readiness to implement IPE are the most pertinent to IPE experiences involving health professions that were later added into IPEC because of the emerging roles of these disciplines within interprofessional teams (LeFlore et al., 2017).

Educational Silos

IPE should be integrated early in degree programs to allow students sufficient time to develop a foundation for building collaborative practice (Brisolara et al., 2019). Furthermore, IPE activities must model real world problems to allow for the development of appropriate solutions (Johnson, 2019). It is difficult, however, to do so as each profession has its own area of expertise, which become the core focus for students (Lima et al., 2018). For example, counseling students tend to stay within their own educational silo learning from counselors and with other counseling students (Johnson, 2019). These educational silos can hinder readiness for IPE as no other similar collaborative experiences have been provided throughout their academic career (Johnson, 2019).

Hierarchy

In 2016, IPEC incorporated additional professional organizations into the collaborative framework, specifically podiatrists, physical therapists, occupational therapists, psychologists, veterinarians, optometrists, allied health professionals, social

workers, and physician assistants (IPEC, 2016). As more health disciplines continue to be incorporated into IPEC, competencies are made with flexibility as to how to obtain those competencies (IPEC, 2016). Furthermore, issues of power differentials arise, which can prohibit some disciplines from collaborating with others (Ambrose-Miller & Ashcroft, 2016). Self-identity can be a challenge for the implementation of IPE when students are not acquainted with their own role in an interprofessional health care team (Ambrose-Miller & Ashcroft, 2016). Both power differentials and self-identity are concepts that arise when considering the socialization of an unwritten hierarchy between health professions (LeFlore et al., 2017). This hierarchy leads to issues involving collaboration and teamwork as was found in a study assessing nurses and social workers participating in a simulation after a yearlong IPE course (LeFlore et al., 2017). There is a need for all health professions to move beyond conceptualizing health professional roles within an unwritten hierarchy in order to achieve effective interprofessional collaboration (Ambrose-Miller & Ashcroft, 2019).

Faculty Readiness to Implement IPE

The implementation of IPE in degree programs whether, at the undergraduate or graduate level, must take into account the attitudes and perceptions of health discipline faculty as they influence a school's ability to implement IPE (Lash et al., 2014). In order for IPE to be effective, collaborative practice must exist where students and professors from different health disciplines come together to dialogue about different ways to handle patient scenarios (Lima et al., 2018). Educational activities to improve collaboration among students are difficult to organize when professors fail to collaborate (Lima et al., 2014).

Lash and colleagues (2014) found a statistically significant difference among attitudes and perceptions of faculty from osteopathic medicine, pharmacy, and physician assistant programs when it came to emphasizing to students the importance of learning to work with other health professionals and feeling supported by the college to integrate IPE. The study further found that differences in perceptions can be affected by readiness of faculty to integrate IPE in existing degree programs (Lash et al., 2014). Faculty must have opportunities to receive training on the theory behind IPE as well as its importance to ensure their readiness and support of IPE practices (Brisolara et al., 2019).

Perspectives of Different Professions on IPE

Health professions have different perspectives towards IPE, requiring the need for curricula incorporating the voice of a diverse panel of health professions (Brisolara et al., 2019). Despite different perspectives, all professionals must be able to identify their role and responsibilities when being part of a care team (Breitbach et al., 2015). A study by Simko and colleagues (2017) found a statistically significant improvement in nursing and pharmacy students' knowledge of each other's role in a care team after an IPE activity. The students' self-reported low scores in understanding roles and responsibilities before the IPE activity suggested a lack of previous experience with how nursing and pharmacy professions are expected to work together on a care team (Simko et al., 2017). It is evident that limited research exists on baseline attitudes of students in health professions, which is especially true of the health professions integrated into IPEC in 2016 (Gillette et al., 2019). The newly added professionals have a unique perspective on IPE as the roles of these professions within interprofessional teams are a work in progress (Breitbach et al., 2015).

There is a need for health professionals from different disciplines to acknowledge IPE as a mechanism for improving their ability to excel in interprofessional collaboration in future practice (Breitbach et al., 2015). A study by Azmi and Kutty (2019) analyzed the perceptions of allied health professionals, midwifes, and nursing students. The study found that while students had positive attitudes towards interprofessional learning, communication, teamwork, and interprofessional relationships, some students held negative attitudes towards interprofessional interaction (Azmi & Kutty, 2019). It is possible for stereotypes of other professions to influence negative attitudes towards interprofessional interaction (LeFlore et al., 2017). Another possible explanation is that students have different experience levels in interacting with other students and more specifically, other professions (Simko et al., 2017).

From IPE to Professional Practice

As IPE continues to be added to program curricula and accreditation standards, there has been a shift towards assessing the effects of IPE in professional practice. Program evaluation research shows participants are open towards IPE, but it is inconclusive whether IPE participants have improved patient outcomes (Musaji et al., 2019). A systematic review assessed the effects of IPE among allied health students (Olson & Bialocerkowski, 2014). The systematic review found different studies where IPE participants showed a significant change in attitudes and collaboration, but the studies did not point towards what specific IPE activities were most effective (Olson & Bialocerkowski, 2014). In order to understand how IPE affects professional practice, there is a need to better understand which IPE experiences are the most useful and for which profession (Olson & Bialocerkowski, 2014).

According to the RWJF (2015), the positive outcomes of IPE are seen in professional practice when there is a coinciding organizational culture shift that welcomes a change of practice better fit to the modern world. Organizations need to move beyond hierarchies and status quo (RWJF, 2015). This shift towards acceptance of IPE begins in the universities shaping future health professionals (WHO, 2010).

In order for IPE to create change in professional practice, students must understand why it is emphasized (Dow et al., 2013). A study on graduate-level health profession students found, on average, a competent to mastery level of communication between teams and active listening among students (Knetch-Sabres et al., 2016). In this study, students voluntarily participated in a half-day event consisting of learning about the theory behind IPE and followed through with a patient case scenario (Knetch-Sabres et al., 2016). The theoretical basis for IPE needs to be incorporated in curriculum with opportunities for students to show their use of these concepts (Dow et al., 2013).

Using IPE Simulation to Bridge Instruction and Practice

It is necessary to have IPE activities which create spaces for students to learn alongside other students from different health professions in order to build collaboration and patient care skills (Wong et al., 2016). While IPE can be integrated within curriculum in a variety of ways, the usage of simulations provide a replication of clinical experience, or a case most like the real world without the risk of harming actual patients (Zhang et al., 2011). Therefore, simulation is a teaching strategy that allows students to make mistakes without detrimental consequences (Zhang et al., 2011).

Simulation has emerged alongside IPE as a method for closing patient safety gaps while providing real world, hands-on experience in a controlled environment (Palaganas

et al., 2014). According to Palaganas and colleagues (2014), simulation is a technique using scenarios related to patient care to provide opportunities for students to learn and practice. Simulation is useful because its main goal is to reduce mistakes in the workplace, ultimately improving patient outcomes (Zhang et al., 2011).

Simulation continues to grow as a favored technique for IPE (Palaganas et al., 2014). Wong and colleagues (2016) analyzed the effects of two simulation scenarios on staff at a university-affiliated teaching hospital. The study found that using simulation scenarios enhanced students' experiences, and there was a statistically significant increase in positive responses towards event reporting, teamwork within hospital units, and hospital handoffs and transitions (Wong et al., 2016). The simulation provided opportunities for staff to show their level of expertise, as appropriate, in a risk-free environment (Palaganas et al., 2014). As such, introducing a risk-free environment may provide comfort to participants by providing a safe space to break down barriers as a team (Wilcox et al., 2017).

IPE simulations are beneficial to current health professionals, making them a crucial component for aspiring health professionals' education (Wilcox et al., 2017). Wilcox and colleagues (2017) used a pre-test post-test design to survey students from medicine, nursing, and social work to assess their attitudes towards working in teams and preparation for participation in IPE. The study found the simulation to benefit students by creating a culture of teamwork and acceptance with other health professions (Wilcox et al., 2017).

In another study, Morrell and colleagues (2019) assessed attitudes from athletic training, nursing, and occupational therapy students who participated in a simulation. The

researchers used the JeffSATIC scale, which assesses attitudes towards interprofessional collaboration (Morrell et al., 2019). The study found a statistically significant difference in perceptions of positive factors regarding interprofessional collaborative practice among the participating professionals who were required to collaborate as interprofessional teams during a simulation (Morrell et al., 2019). Existing research indicated that simulation experiences provide a bridge for instruction and practice by building collaborative practice (Palaganas, et al., 2014).

Perceptions of Challenges among Students Participating in an IPE Simulation

The newness of IPE in certain professions can lead students to perceive different challenges when participating in an IPE simulation. As external influences are considered to be minimal, certain professions will have greater challenges due to having limited exposure to interprofessionlism (Johnson, 2019). A recent study suggested that, since IPE remains a new component in curriculum, it is expected for students to have little to no external influences on their shaped perceptions and attitudes towards IPE (Brisolara et al., 2019). There can be confusion as to the expectations of taking part in interprofessionalism as was seen in a study by LeFlore and colleagues (2017) who observed graduate-level nurse practitioner and social work students. During the simulation, social work students expected more guidance from faculty while the nursing students were able to act without the need for direction (LeFlore et al., 2017). Despite social work students wanting more guidance, both professions acknowledged communication as key to effective patient-centered care (LeFlore et al., 2017). Thus, students must be made aware of the competencies set by IPEC to grasp a better

understanding of the purpose of IPE activities serving as a mechanism to better prepare students to enter professional practice (Gillette et al., 2018).

Purpose of the Study

There is a lack of research on the health professions recently added into IPEC in 2016. There is also a lack of qualitative research assessing IPE outcomes among health profession students. In this study, the IPE simulation experience of graduate students at California Baptist University (CBU) was examined to explore differences among six professional tracks of athletic training, speech language pathology, graduate nursing, public health, physician assistants, and behavioral and social sciences.

Existing literature used quantitative data from reliable survey tools to assess differences among health professions. This study added to the literature by using qualitative data regarding the participants' perceptions of challenges and methods of collaboration while participating in an IPE simulation. Since previous literature had limited research on athletic training, social and behavioral sciences, and physician assistants due to their more recent incorporation into IPEC in 2016, this study also added to existing literature by assessing some of those health professions. The overall purpose of this study was to explore and describe what the graduate students from the six health professions experienced during the IPE simulation through the use of qualitative methods.

Research Questions

The following research questions led this study:

1. What are the common themes or salient beliefs of IPE participants when asked, "What were the challenges (of working with other health professions)?"

2. What are the common themes or salient beliefs of IPE participants when asked, "In what ways did you collaborate with others, as appropriate, to assess, plan, provide care/intervention and make decisions to optimize client/patient, family, and community health outcomes?"

3. Do the common themes or salient beliefs of IPE participants differ across the health professions?

Method

Design

A cross-sectional, qualitative design was used to analyze the responses to open-ended survey questions of graduate level students from across six health professions who participated in a four-hour IPE simulation. The IPE simulation occurred at California Baptist University in April 2019. This study was approved by the CBU Institutional Review Board (IRB).

Procedures

Graduate students from the six health professions were required to enroll in three IPE classes over the course of their degree program. The courses aligned with the IPEC competencies and framework of Exposure, Immersion, and Competence. The simulation course represented the competence phase of the curriculum. At the conclusion of the competence course, students were required to attend an IPE simulation and complete a reflection paper and participant survey. The survey included eight open-ended questions (Appendix B). The first three survey items were used to collect data on the participants' health profession, IPE participation, and student identification numbers. The remaining five questions were used to collect data on the experiences of students during the simulation to assess whether or not specific competencies were met. On average, survey completion took 10 minutes. The data used in this research study was de-identified.

Participants

To be included in this study, students must have responded "Yes" to the survey question, "Did you attend the IPE event?" Students must also have provided a response to "What profession do you represent?" Those who responded "No" to the survey question

about attendance or failed to provide their health profession were excluded from the study. This resulted in a study sample of 143 student participants comprised of athletic training (12.6%), speech language pathology (15.4%), nursing (28.7%), public health (11.9%), physician assistant (19.6%), and behavioral and social sciences (11.9%). All participants were graduate students enrolled in one of the six degree programs.

Study Variables

The first variable in this study was the type of health profession. This was measured using the question, "What profession do you represent?" Participants were asked to indicate their health profession. Later, each health profession was coded as a numerical value. The values were "1 = athletic training," "2 = speech language pathology," "3 = graduate nursing," "4 = public health," "5 = physician assistant," "6 = behavioral and social sciences," and "999 = missing."

The second variable was "perceptions of challenges of working with other health professions." This was measured using Survey Question 5, which was an open-ended question, "What unique skill sets did you feel you brought the team? What were the strengths of working with other health care professionals? What were the challenges?" This question was coded in the analysis as a three-part question. Only Part C, "What were the challenges?," was used in this study. The responses were grouped based on similar themes. The coding for the themes were "1 = communication," "2 = interprofessional collaboration," "3 = SALT triage," "4 = leadership," "5 = role identification," "6 = ethics and values," "7 = lack of training," "8 = power struggles," "9 = planning." and "10 = emotional state of mind."

The third variable was "methods of collaborating with other health professions." This was measured using Survey Question 6, which was an open-ended question, "In what ways did you collaborate with others, as appropriate to assess, plan, provide care/intervention and make decisions to optimize client/patient, family, and community health outcomes?" Theming was used to group similar responses. The coding for the themes were "1 = action plan," "2 = patient identification," 3 = communication," "4 = second opinion," "5 = helping hand," "6 = check ins," "7 = sharing ideas," "8 = understanding roles," "9 = role specific assistance," "10 = delegating tasks," "11 = debrief," "12 = respect," and "13 = lack of collaboration."

Data

Theming

Theming was used to group similar responses to open-ended survey questions, establishing the common categories of responses among the participants. It is important to note that themes were created while reading the responses. For the variable, "perceptions of challenges of working with other health professions," all responses were read in order to separate them based on which part of the survey question was answered. A separate file was created to save all responses for Part C of Survey Question 5. Participants who failed to answer Part C were noted as missing data. For the variable, "methods of collaborating with other health professions," the corresponding question was a single question. Participants who failed to respond to Survey Question 6 were noted as missing data.

Responses read were grouped in counts of 25. Memos were created highlighting similar terminology or examples used by respondents. This memo process was repeated

six times until all 143 responses had an initial emergent idea identified. After this, responses were read again to collapse similar ideas to analyze the dataset as a whole. A codebook was created to categorize all interpretations of themes and their defining characteristics (Appendix C and D). The responses were read again to ensure themes were properly defined in the codebook. A section on when to use and when not to use the specified theme was also included. Once the codebook was finalized, responses were reviewed one last time as a quality check to ensure the participants' responses were coded correctly. Each theme had a shortened name and numerical code assigned to it. All responses were coded as only one theme. When a response fell into more than one theme, the theme described in most detail, such as by providing an example, was selected. This process was repeated for both research questions.

Data Analysis

The purpose of the analysis was to describe and explain the perceptions of challenges faced and methods of collaboration when participating in an interprofessional team during an IPE simulation. The data was tabulated in order to describe the frequencies of each theme for each health profession and for all participants as a whole. The Statistical Package for the Social Sciences (SPSS) was used to calculate frequencies. Differences in emergent themes across health professions were explored using descriptive statistics.

Results

Challenges of IPE

The first research question, "What are the common themes or salient beliefs of IPE participants when asked, 'What were the challenges (of working with other health professions)?,'" addressed perceptions of challenges regarding effective communication, conflict resolution, and positive interprofessional working relationships when working with other health professions during the IPE simulation. There were 122 responses analyzed, resulting in an 85% response rate. The frequencies of each theme were determined for responses to perceptions of challenges. As shown in Table 1, there were 10 themes identified describing the perceptions of challenges among the IPE participants. These included, communication, interprofessional collaboration, SALT triage, leadership, role identification, ethics and values, lack of training, power struggles, planning, and emotional state of mind. The leading three common themes among the IPE participants were interprofessional collaboration (33.6%), role identification (13.9%), and planning (13.1%). The least common theme was ethics and values (0.8%).

The leading themes were all defined as unique challenges faced by the participants. After considering all responses, interprofessional collaboration was best defined as instances where teams failed to keep track of each other or failed to put a system in place for keeping track of each other in order to maximize resources. For example, one participant stated, "*The challenges were not being able to stick together, and not being able to help as much.*" Next, role identification was defined as challenges with identifying the scope of practice for each team member in order to fulfill specific tasks. A participant stated that, "*The challenges were [not] knowing what professions the*

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other members of the groups were." Finally, the theme of planning was defined as challenges with developing a way for maximizing resources during the simulation. Planning also included not having a plan for what to do when there was no one available to assist. An example of this can be found in the statement, "*The challenge was finding someone who was available when I needed them.*"

IPE Methods of Collaboration

The second research question, "What are the common themes or salient beliefs of IPE participants when asked, 'In what ways did you collaborate with others, as appropriate, to assess, plan, provide care/intervention and make decisions?,'" addressed methods of collaboration among IPE participants. There were 140 responses analyzed, resulting in a 98% response rate. The frequencies of each theme were also determined for responses to methods of collaboration. As shown in Table 2, there were 13 themes identified describing the methods of collaboration. These included, action plan, patient identification, communication, second opinion, helping hand, check-ins, sharing ideas, understanding roles, role specific assistance, delegating tasks, debriefing, respect, and lack of collaboration. The top three common themes among the IPE participants were helping hand (17.9%), sharing ideas (13.6%), and patient identification (12.1%). Only 2.1% of the IPE participants felt there was a lack of collaboration during the simulation. The least common theme was check-ins (1.4%), which was defined as checking in with team members during the simulation to ensure progress.

The leading theme of helping hand was defined as collaborating within an interprofessional team by providing hands-on assistance regardless of whether or not the task fell within the health professional's scope of practice. An example of this can be

found in the statement, "*I was able to triage with other health professions. I not only used my skill sets, but also lend a helping hand in all areas. I assessed a patient with Parkinson's disease. I communicated with a hard of hearing teenage patient and assisted with triage.*" Next, the second leading theme of sharing ideas was defined as collaborating by discussing ideas or concerns among team members in order to ensure taking the best course of action. An example of this is the statement, "*Ways to collaborate with others is to be open to the other professionals and their suggestions and recommendations. They are experts in their field and their opinions should be valued. It is also essential to listen to the family's needs.*" Lastly, the third leading theme of patient identification was defined as collaborating by relocating and assisting patients based on their needs using triage skills. A participant statement that supported this theme included, "*We worked together to decide who needed to be treated first. We also helped each other transport.*"

Differences across IPE Profession

The salient beliefs regarding participant perceptions of challenges and methods of collaboration during the IPE simulation were identified. The frequencies were determined for the entire sample and for each of the six health professions. Across the 10 themes identified for perceptions of challenges and the 13 themes for methods of collaboration, there were variations in aggregate responses across the six health professions.

Perceptions of Challenges by Health Profession

When considering perceptions of challenges, there were differences in the leading themes across the six health professions (see Table 1). Interprofessional collaboration was the most common challenge for the professions of athletic training (35.3%), graduate

nurses (30.0%), public health (42.9%), physician assistants (25.9%), and behavioral and social sciences (61.5%). The most common challenge for speech pathologists was lack of training (28.6%). Lack of training was best defined as challenges dealing with fulfilling required tasks due to not knowing how to do it, lack of understanding of medical terminology, or failing to recognize the appropriate response required. An example of this is the participant's response stating, *"The challenges were that there were no direct instructions to where to transport the patient or what to do with severely wounded patients."*

Methods of Collaboration by Health Profession

When considering methods of collaboration, the six health professions had differences in their leading themes as shown in Table 2. The most common theme for speech language pathologists (31.8%) and public health (29.4%) was helping hand. The most common theme for physician assistants (21.4%) and behavioral and social sciences (29.4%) was sharing ideas. The most common theme for athletic training was a three-way tie between communication (16.7%), sharing ideas (16.7%), and understanding roles (16.7%). The theme of communication was defined as being able to collaborate by asking for assistance when needed and asking others if they need assistance. Furthermore, understanding roles was defined as collaborating through the discussion of each participant's role and scope of practice to ensure all team members understood what the others were capable of. Lastly, for graduate nurses, the most common theme was role specific assistance (23.7%), which was defined as collaborating by fulfilling a need that was specific to the participant's health profession. For example, a participant stated, *"It*

was getting speech language to come and talk to one patient I found to be deaf. It was

getting marriage family therapists to attend to those in shock."

Summary of Major Findings

The purpose of the study was to describe the common themes or salient beliefs regarding perceptions of challenges of working among interprofessional teams as well as methods of collaboration while in these teams. This study also explored whether or not differences exist between the six health professions of athletic training, speech language pathology, graduate nursing, public health, physician assistants, and behavioral and social sciences in regards to their experiences during an IPE simulation. Results from this study suggest that among the health professions involved there may be differences in perceived challenges of working with professionals from other health fields. There also may be differences when it comes to methods of collaboration. Research studies using qualitative approaches to explore participant experiences during an IPE simulation are limited. More specifically, there is limited literature exploring the perceptions of health professionals from the allied health sector. The results of this study help bridge these gaps by using open-ended response data from graduate students from a variety of health professions.

Participants were able to identify 10 challenges with participating on interprofessional teams. Current literature indicated interprofessional simulations are new experiences for health profession students (LeFlore et al., 2017). Due to unfamiliarity with simulations, this can be challenging for students who only met the day of the simulation. The literature also indicated that certain professions face educational silos, such as students from behavioral and social sciences, which limit their capacity for having the necessary skills to work in interprofessional teams (Brisolara et al., 2019). In this study, behavioral and social science students reported the most challenging aspect of

the simulation was a lack of interprofessional collaboration, which can be a result of these educational silos. The educational silo could have impacted their knowledge of the other health professions they worked with during the simulation. It potentially also affected their understanding of their role on an interprofessional team. The literature indicated that a lack of understanding of one's role impacts one's ability to act during a simulation as the student seeks direction from faculty and staff (Ambrose-Miller & Ashcroft, 2016).

On the other hand, speech language pathologists were the least likely to report interprofessional collaboration as a challenge. There is limited research considering speech language pathologists within the IPE framework. This is, in part, due to the limited research on graduate-level IPE. This degree program is specialized. Due to this specialization, it can be that students are knowledgeable of their professions' roles and responsibilities on health care teams. The literature suggested that knowledge of one's role and responsibility has an effect on attitudes and perceptions of interprofessionalism (Ambrose-Miller & Ashcroft, 2016). It can also be that speech language pathologists do not experience an educational silo. The graduate-level speech language pathologists students in this study complete at least 400 hours of clinical hours in different settings like schools, the community, and medical settings. This exposure to different settings may result in having to work with different professionals, which could have impacted their ability for interprofessional collaboration.

Out of all of the responses, three participants reported feeling a lack of collaboration. Of the participants that indicated a lack of collaboration, two were athletic trainers and one was from behavioral social sciences. The literature supported the finding

of lack of collaboration as a theme for athletic trainers and behavioral and social sciences (Ambrose-Miller & Ashcroft, 2016; Breitbach et al., 2015). IPE is used to socialize different health professions so that the professionals may understand their roles and the roles of others while on an interprofessional team in the health care setting (Breitbach et al., 2015). The Department of Allied Health Professions at CBU trains athletic training students, while behavioral and social science students are trained under the College of Behavioral and Social Science. The literature indicated that professions from allied health face unique struggles as a result of being more recently added to IPEC in 2016 (Brisolara et al., 2019; IPEC, 2016). As such, the accreditation standards of some professions are up and coming in regard to integrating IPE into curriculum standards (IPEC, 2016).

The most common perceived challenge of the simulation was interprofessional collaboration. The most common reported method of collaboration during the simulation was lending a "helping hand." Even though students were eager to work together and help each other, the most common challenge was interprofessional collaboration. While students were able to point to one-on-one instances of receiving or providing assistance to team members, it was more difficult to pinpoint examples of the team working together as a whole unit. While IPE sets out to equip students from health care professions to work on interprofessional teams, in this case there seemed to be a disconnect from what was learned in the classroom to what was actually seen in the clinical setting (Simko et al., 2017).

Public Health Implications

IPE continues to expand to other health professions with the expectation of developing a workforce that is able to minimize the challenges of working with other

health professions while maximizing collaborative practice. Collaborative practice is necessary for positive patient care, patient advocacy, and even to reduce health care costs (Breitbach, et al., 2015). Using IPE within college settings catering to a variety of health professions can provide a greater opportunity to improve collaboration among health professions and ease integration into a health care system that relies on interprofessionalism (Breitbach et al., 2015). Future research should focus on college programs that cater to a wide variety of health professions in order to understand how each health profession perceives IPE. It is necessary to research IPE simulation experiences as this avenue is risk-free environment simulating real world practice.

There remains a gap in knowledge pertaining to the outcomes of IPE simulations in the professional setting. Simulations are considered a mechanism to bridge IPE and professional practice by creating an avenue for students to explore the skills learned in IPE within a risk-free setting (Zhang et al., 2011). Thus, IPE simulation can help answer the questions behind whether or not IPE is leading to positive behavior change once students become health care professionals in their respective clinical settings. Future research should focus on following students into their professional practice in order to understand whether or not IPE skills are retained in the professional setting. More specifically, studies should focus on graduate-level students since graduate degrees are specialized for one particular field.

As many different health professions continue to be integrated into IPEC, there is also a need to research how accreditation status and standards influences the experiences of health profession students. IPEC (2016) has indicated a need for reaching more accreditation bodies to participate in a collective unit that addresses the activities needed

to improve collaboration among diverse health professions. It is unknown whether certain health professions are more receptive to IPE when IPE is built into the accreditation standards of the degree programs. Accreditation can play a role in readiness of students to participate in IPE and more specifically, an IPE simulation (Johnson, 2019). Future research can look into the differences of students' experiences within an IPE simulation by comparing students in an accredited versus non-accredited degree program.

While IPEC strives to create collective activities for various health professions to participate in, simulations continue to be a viable activity for IPE. This particular study explored experiences of graduate students during a one-time simulation. These simulations provide students with exposure to different health professions, which might often be omitted from the regular curriculum required to satisfy a degree (Zhang et al., 2011). As these educational silos may rise, having multiple simulations during IPE courses can help break down this barrier. Simulations can be a few hours on a set date, providing students meaningful experiences that can be integrated within the existing dense curriculum (Knetch-Sabres et al., 2016). Future research can consider the effects of multiple simulations over the course of a student's degree program.

Study Limitations

The study had a few limitations. One limitation to this study was the survey questions were comprised of compounded questions, resulting in a loss of sample as participants did not answer all parts of a question. Future studies must include individual survey questions asking about one attribute at a time. This would allow for participants to be thorough in funneling responses to discuss that attribute. A second limitation of this study was a lack of generalizability across the health professions as all participants were

from one private Christian university in Southern California. The third limitation was the distribution of the survey at the end of the simulation. It is likely participants were fatigued after the four-hour simulation. This could have negatively impacted the participants' level of detail in responding to the open-ended survey questions.

Conclusion

This study found a variety of common themes that together described the IPE simulation experiences of participants from the six different health professions. IPE simulations provide an avenue for mimicking real-world scenarios in a risk-free environment (Zhang et al., 2011). Since IPE simulations can bridge the gap between the instruction setting and professional practice, future studies must continue to explore the experiences of students during a simulation. This can help in understanding the effects of IPE on professional practice.

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Appendix A: Tables

Table 1
Perceptions of Challenges among IPE Participants by Profession (n=122)

Theme	Frequency, *n* (%)						
	Overall IPE Participants	AT	SLP	GN	PH	PA	BSS
Communication	12 (9.8)	3 (17.6)	0 (0.0)	3 (10.0)	3 (21.4)	3 (11.1)	0 (0.0)
Interprofessional Collaboration	41 (33.6)	6 (35.3)	5 (23.8)	9 (30.0)	6 (42.9)	7 (25.9)	8 (61.5)
SALT Triage	5 (4.1)	0 (0.0)	1 (4.8)	2 (6.7)	0 (0.0)	1 (3.7)	1 (7.7)
Leadership	5 (4.1)	0 (0.0)	1 (4.8)	3 (10.0)	0 (0.0)	1 (3.7)	0 (0.0)
Role Identification	17 (13.9)	3 (17.6)	3 (14.3)	4 (13.3)	2 (14.3)	4 (14.8)	1 (7.7)
Ethics and Values	1 (0.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (7.7)
Lack of Training	13 (10.7)	0 (0.0)	6 (28.6)	2 (6.7)	1 (7.1)	4 (14.8)	0 (0.0)
Power Struggles	6 (4.9)	1 (5.9)	1 (4.8)	2 (6.7)	1 (7.1)	1 (3.7)	0 (0.0)
Planning	16 (13.1)	3 (17.6)	4 (19.0)	4 (13.3)	0 (0.0)	3 (11.1)	2 (15.4)
Emotional State of Mind	6 (4.9)	1 (5.9)	0 (0.0)	1 (3.3)	1 (7.1)	3 (11.1)	0 (0.0)
Total	122 (100.0)	17 (100.0)	21 (100.0)	30 (100.0)	14 (100.0)	27 (100.0)	13 (100.0)

Note. This table demonstrates the themes pertaining to all IPE participants. When a zero is indicated, that particular theme did not pertain to the specified profession. AT = Athletic Training; SLP = Speech Language Pathology; GN = Graduate Nursing; PH = Public Health; PA = Physician Assistant; BSS = Behavioral and Social Sciences.

Table 2

Methods of Collaboration among IPE Participants by Profession (n=140)

Theme	Frequency, *n* (%)						
	Overall IPE Participants	AT	SLP	GN	PH	PA	BSS
Action Plan	12 (8.6)	1 (5.6)	1 (4.5)	2 (5.3)	4 (23.5)	2 (7.1)	2 (11.8)
Patient Identification	17 (12.1)	1 (5.6)	2 (9.1)	8 (21.1)	1 (5.9)	3 (10.7)	2 (11.8)
Communication	12 (8.6)	3 (16.7)	3 (13.6)	3 (7.9)	2 (11.8)	1 (3.6)	0 (0.0)
Second Opinion	5 (3.6)	1 (5.6)	1 (4.5)	1 (2.6)	1 (5.9)	1 (3.6)	0 (0.0)
Helping Hand	25 (17.9)	2 (11.1)	7 (31.8)	6 (15.8)	5 (29.4)	3 (10.7)	2 (11.8)
Check Ins	2 (1.4)	0 (0.0)	1 (4.5)	0 (0.0)	0 (0.0)	1 (3.6)	0 (0.0)
Sharing Ideas	19 (13.6)	3 (16.7)	2 (9.1)	2 (5.3)	1 (5.9)	6 (21.4)	5 (29.4)
Understanding Roles	12 (8.6)	3 (16.7)	1 (4.5)	2 (5.3)	1 (5.9)	3 (10.7)	2 (11.8)
Role Specific Assistance	16 (11.4)	1 (5.6)	2 (9.1)	9 (23.7)	1 (5.9)	3 (10.7)	0 (0.0)
Delegating Tasks	7 (5.0)	0 (0.0)	0 (0.0)	2 (5.3)	1 (5.9)	4 (14.3)	0 (0.0)
Debrief	6 (4.3)	0 (0.0)	2 (9.1)	2 (5.3)	0 (0.0)	0 (0.0)	2 (11.8)
Respect	4 (2.9)	1 (5.6)	0 (0.0)	1 (2.6)	0 (0.0)	1 (3.6)	1 (5.9)
Lack of Collaboration	3 (2.1)	2 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.9)
Total	140 (100.0)	18 (100.0)	22 (100.0)	38 (100.0)	17 (100.0)	28 (100.0)	17 (100.0)

Note. This table demonstrates the themes pertaining to all IPE participants. When a zero is indicated, that particular theme did not pertain to the specified profession. AT = Athletic Training; SLP = Speech Language Pathology; GN = Graduate Nursing; PH = Public Health; PA = Physician Assistant; BSS = Behavioral and Social Sciences.

Appendix B: Survey Questions

Q1 What profession do you represent?   Other (please specify):

Q2 Student ID

Q3 Did you attend the IPE event?

Q4 As you reflect on the event , how prepared did you feel to respond appropriately? What did you feel your strengths were? What did you feel your weaknesses were?

Q5 The objectives of the event required you to work as part of an interprofessional team. · You were asked to apply your own uniqueness, including experience level, expertise, culture, power, and hierarchy within the healthcare team, contributes to effective communication, conflict resolution, and positive interprofessional working relationships. What unique skill sets did you feel you brought the the team ?   What were the strengths of working with other health care professionals? What were the challenges?

Q6 In what ways did you collaborate with others, as appropriate, to assess, plan, provide care/intervention and make decisions to optimize client/patient, family, and community health outcomes?

Q7 In what ways will you take what you've learned an apply to your professional practice?

Q8 Open Comments- What is one thing you would change about the event and why? (ie.: registration , flow of the day , rooms or anything else)

Appendix C: Theming Codebook for Perceptions of Challenges

Theme	Defined	When to use it	When not to use it	Example(s)
1. Communication	Being able to effectively communicate with different health professionals amidst an emergency situation	-Issues talking to team member -Did not know how to approach someone so they didn't -Lack of information loop	-Difficulty finding team member -Not knowing role of team member -Did not know how to assist	"Sometimes it was hard to communicate quickly, especially with other professions that don't typically provide medical care" "The challenges were in communicating with members of the team when we were apart trying to help as many patients as possible."
2. Interprofessional Collaboration	Being able to work together by having a system to keep track of team members in order to provide profession specific assistance during an emergency situation	-Could not find specific team member needed to fulfill a certain task at hand -team member lacks the necessary support from another team member -Difficulty staying together and not being able to assist each other	-Difficulty talking with team members -Could not properly identify person's role -Did not take initiative to fulfill role required	"often times I could not find my team. There were so many people and we had to decide together who we would help first" "The challenged were not being able to stick together, and not being able to help as much."

3. SALT Triage	Being able to properly prioritize, asses, and reassess patients to ensure the proper health professional provides the services needed	-Triage of patients -Properly prioritizing patients	-Not knowing medical terminology -Unable to treat patient	"The SLP and family and marriage therapist in my group at several times asked which patients/ client to focus on over the others" "The challenges within the simulation involved the inability to plan ahead of time and the lack of knowledge needed to asses and treat the patients accordingly."
4. Leadership	-Being able to fulfill the roles required to amend the situation especially by taking initiative to be a leader when needed	-Team needed a leader and no one stepped up -Unable to figure out how to work with other teams when required	-Unable to fulfill own role due to issues of hierarchy -Difficulty maximizing resources due to not keeping track of what was available	"Challenges were there was no clear overall leadership in the critical tent. I feel there needed to be someone enforcing who was critical and who wasn't." "challenges but knowing whom to turn to for direction or knowing if I had the authority to make decisions"
5. Role Identification	Being able to identify the scope of practice of each team member to ensure knowing which team member to ask for assistance	-Unable to understand each role's scope of practice - Issues identifying the specific role each team member pertained to	-Could not find a specific team member -Did not take initiative to become leader	"The challenges were knowing what professions the other members of the other groups were." "The challenges were the lack of knowledge regarding one another scope of practice."

6. Ethics and Values	Being able to console patients during an emergency situation	-Different perspectives on how to care for patients -No efforts to console patient in distress	-Unable to respond due to anxiety from chaotic environment -Unable to treat patient due to lacking skill	"challenges included different ethics and values that guided their actions. I can only imagine that in the case of an active shooter, team actions related to ethics and values are guided from past and current experiences as well as emotions."
7. Lack of Training	Being able to fulfill tasks required during an emergency situation where resources are stretched thin	-Was unable to fulfill the task at hand -Did not know basic medical terminology -Did not understand the appropriate response to an emergency situation	-Unable to identify the proper health profession to assist -Unable to treat a patient -Lack of maximizing resources	"challenge was answering correctly" "The challenges were that there were no direct instructions to where to transport the patient or what to do with severely wounded patients"
8. Power Struggles	Being able to speak up while in an interprofessional team and fulfill the role specific to their health profession without backlash from a different health profession	-Difficulty finding voice within team -Was talked over by other team members -Was unable to perform their own role due to other team member over stepping into that role	-Not reaching out to team member due to not knowing their role -Difficulty finding specific team member -Did not understand role in emergent situations	"the challenges were advocating for my profession and verbalizing to my team my skillset and what I bring to the table" "the challenges were getting people to stick to their assigned roles."
9. Planning	Being able to develop a plan for keeping track of supplies and resources available while also planning what to do	-Did know what resources were available -No plan for what to do with scare resources or when	-Not finding specific health professional -Lacking a leader to coordinate efforts	"The challenges were not having the appropriate equipment to deliver oxygen to patients (we only had access to BVMS). Similarly, it was

	when resources were not available including supplies and personnel	resources were not available -Did not know what to do when a specific health professional was not available	-Unable to prioritize patients	unclear what the responsibility of the acute care unit was. I felt that lead to some confusion." "There challenge was finding someone who was available when I needed them."
10. Emotional State of Mind	Being able to work in a chaotic environment despite one's own feelings and emotions	-Difficulty working through a chaotic environment	-Providing inadequate patient care by ignoring how the patient feels	"The challenges were my emotional feelings. I was filled with anxiety but kept it under control." "My challenge is, coping with the stressful tasks to complete."

Appendix D: Theming Codebook for Methods of Collaboration

Theme	Defined	When to use it	When not to use it	Example(s)
1. Action Plan	Being able to make an action plan as to how team will work together during the simulation	-planning before the simulation -adjusting plan during the simulation	-triaging of patients -getting assistance from proper health professional	"Before the start of the event, my group was able to come up with a game plan in order to address the needs of the wounded."
2. Patient Identification	Being able to relocate and assist patients based on their needs while using triaging skills	-prioritizing patients based on need -assisting other professions with triage	-discussing care plan for a patient -asking for a second opinion when unsure of course of action	"We worked together to decide who needed to be treated first. We also helped each other transport."
3. Communication	Being able to assist team members as needed by asking for assistance when required and asking others if they needed assistance	-asking team for assistance -asking questions during the simulation	-getting assistance from a specific health professional -sharing ideas and concerns with team members	"In particular I was able to collaborate with others in terms of the C-Spine patients who needed to be transported. I fundamentally could not do it on my own, so it required I communicated and worked with other professions. Additionally, I jumped in by asking other professionals how I could help."
4. Second Opinion	Being able to ask another team member for assistance with making a decision when	-asking for a second opinion when unsure of course of action	-discussing patient care plan due to diverse needs of patient	"I spoke a lot with my group members and other members of the nursing discipline when

		-not wanting to make the wrong call	-getting help from a specific health profession	I have decision making concerns or questions and it was helpful that there were enough of them near by when I needed them."
unsure about which course of action to take				
5. Helping Hand	Being able to provide hands on assistance where needed regardless of whether or not it deals with their scope of practice	-assisting wherever needed due to high demand -identifying team members that needed assistance	-identifying the specific health profession needed for assistance -asking for assistance	"I was able to triage with other health professions. I not only used my skill sets, but also lend a helping hand in all areas. I assessed a patient with Parkinson's Disease. I communicated with a hard of hearing teenage patient and assisted with triage."
6. Check Ins	Being able to check in with other team members to ensure proper progress during the simulation	-checking to see how team members are doing -checking for status of progress being made	-asking for assistance -sharing of patient specific details	"As a team, we collaborated by assigning roles and figuring out next steps. We tried to always meet up with each other during the event to figure out our next move and strategize what was needed to successfully make a difference in this event."
7. Sharing Ideas	Being able to discuss ideas, concerns, and findings to ensure	-discussing patient care plan	-asking for a second opinion -discussing what went right/ wrong	"Ways to collaborate with others is to be open to the

	the best course of action is taken especially when determining a patient care plan	-providing professional opinions and concerns		other professionals and their suggestions and recommendations. They are experts in their field and their opinions should be valued. It is also essential to listen to the family's needs."
8. Understanding Roles	Being able to discuss roles and scope of practice to ensure all team members understand what everyone is capable of	-determining what each team members' scope of practice is -sharing responsibility in patient care plan	-helping where needed -asking for a second opinion	"My group collaborated prior to entering the simulation and realized what each of our strong points are. Being able to understand why minute details may not be important to me but guide the overall process of aiding a community is something that stuck with me the most."
9. Role Specific Assistance	Being able to identify the proper health profession that could assist and trusting their expertise by sharing responsibility over caring for a patient	-asking for help from a specific health profession	-asking for help in general terms without identifying the specific health profession needed	"My team collaborated but we were broken up. It was getting speech language to come and talk to one patient I found to be deaf. It was getting marriage family therapists to attend to those in shock."

10. Delegating Tasks	Being able to divide tasks among team members to ensure efficiency	-dividing up the work that must be completed	-creating an action plan before simulation	"Using my nursing skills to help direct victims and non-nurses in the team to ensure effective care"
11. Debrief	Being able to debrief with team about what worked and did not work	-discussing what worked and did not work after the simulation	-discussion patient care plan during the simulation	"We were able to discuss the event and determine what additional care was needed to help the survivors during their grieving process. During the event we didn't have the luxury of time to discuss what to do, we just helped those in critical need as they were coming into the care unit."
12. Respect	Being able to show respect towards other health professionals by affirming the significance of every health profession	-being polite when talking to other professions -nonverbal cues such as eye contact	-asking other professions for assistance -properly identifying the role that needs to assist	"I find that collaboration is important with IPE, and to know how to collaborate with one another, listening to all forms of understanding with other professionals. When respect is incorporated into the IPE functioning, there will be an improvement in patient care, respect, quality and health."

13. Lack of Collaboration	No examples provided as to how different health professionals were able to collaborate	-feeling the need to be assertive in order to be heard	-lacking knowledge or skills	"I actually felt that I wasn't able to collaborate with others when I was helping others with their psychological crisis. Everyone was working with the individuals that were physically wounded."