Improving Interprofessional Collaboration Between Social Work and Pharmacy Through Hybrid and Virtual Learning Experiences

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Abstract

The professions of pharmacy and social work are not generally assumed to directly collaborate in patient care; however, these professions are complementary. Health and wellbeing outcomes are significantly improved when care is managed by an interprofessional team that communicates and collaborates to ensure all aspects of care are effectively managed. The creation of educational opportunities for students to practice working together provides enhanced educational experiences and leads to their success as professionals. Pharmacy and social work faculty developed an interprofessional education activity specifically aimed at integrative student learning. Faculty and students based on various islands throughout the state of Hawai'i and the US territory of Guam participated in the experience. The case study encouraged interprofessional teamwork and collaboration. The case study also challenged students to share profession-specific knowledge with each other. Mean evaluation scores were compared between hybrid and fully online platforms. Evaluation scores were high and at least as good or higher in the fully online exercise compared to the hybrid exercises. Using the 20-item pre-post format, Interprofessional Collaborative Competencies Attainment Survey, results indicated statistically significant improvements in scores for all questions and domains (all P<.001). When hybrid training and fully online training were compared, there were no significant differences in pre scores, but post domain scores were significantly higher in students who experienced fully online training. This interprofessional case-based activity successfully promoted interprofessional learning and collaboration. Introducing learners to this type of collaborative practice while in school is critical for future collaboration in the workforce.

Keywords

interprofessional education, social work, pharmacy, virtual, social determinants of health (SDOH), medication nonadherence, gerontology, geriatric, kupuna

Abbreviations and Acronyms

ICCAS = Interprofessional Collaborative Competency Attainment Survey
IPE = Interprofessional Education
IPEC = Interprofessional Education Collaborative
SDOH = Social Determinants of Health

Introduction

The vision for the Healthy People 2030 Framework from the Centers for Disease Control and Prevention is "A society in which all people can achieve their full potential for health and well-being across the lifespan."[1] The foundational principles that guide decisions in the Healthy People 2030 framework require interprofessional team collaboration to operationalize. Studies have found that when pharmacists and social workers collaborate, it results in improved health outcomes such as reduced hospital readmission rates,[2] improved perspectives on mental illness,[3] and other benefits in the treatment of mental illness.[4] The World Health Organization defines interprofessional collaboration as "when multiple health workers from different professional backgrounds work together with patients, families, careers and communities to deliver the highest quality of care across settings."[5] Despite the benefits of interprofessional collaboration between these 2 professions, the literature shows a lack of available interdisciplinary training and the need for more.[4,6] While there may be benefits to collaboration between those in pharmacy and social work, for example, developing better understanding for medication adherence or helping to develop a management plan that helps to bridge the gap between medicine and social or cultural issues,[6] there is also a lack of supporting literature on this topic.[4] This article describes an interprofessional education (IPE) case study between pharmacy and social work students.

IPE is an approach to teaching and learning that brings together students from 2 or more professions to learn about, from, and with one another to enable effective collaboration. The goal of IPE is to improve health outcomes through the education of a practice-ready health care team that is capable of managing patients' needs. This article presents an IPE case study that created an opportunity for social work and pharmacy students to work together.

Health and wellbeing outcomes are significantly improved when care is managed by an interprofessional team that communicates and collaborates to ensure all aspects of the patient's illness are managed well.[7] Therefore, a case study was developed that involved medication nonadherence in an elderly patient and required consideration of the patient's social determinants of health (SDOH). SDOH are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health functioning, and quality-of-life outcomes and risks. The design encouraged students to draw on their specific professional knowledge and required collaboration and sharing of expertise to address the patient's needs.

Methods

An online IPE case study for pharmacy and social work students was developed to provide an opportunity for collaboration between disciplines. The purpose of this study was to evaluate the effectiveness of the IPE activity designed to help learners describe the roles of pharmacists and social workers, summarize strategies to support other disciplines in the delivery of health care services, identify potential communication barriers, and strategize solutions to overcome these issues. The study sought to determine whether the case study met its objectives and compared the effectiveness of different delivery methods: hybrid vs. online. In the hybrid method, some students were physically together, in-person, in a classroom, and they interacted with students who logged onto Zoom individually. There were 167 students in the hybrid format and 64 students fully online. Students completed waivers consenting to participation. This project was approved by the University of Hawai'i at Mānoa Institutional Review Board (Approval # 2022-00326).

Study Population

This interprofessional case study was conducted from 2018 to 2021. Data is reported from 2018 (year 1), 2019 (year 2), and 2021 (year 4) only. Data from 2020 (year 3) were not included in the analysis due to technical software issues that resulted in inconsistent data collection and, thus, a potential loss of data integrity.

Description of Interprofessional Activity

Students were randomly assigned into groups of 5 to 6 students to facilitate learning through active participation, contact between participants, and purposeful activity.[8] Each group had representation of both professions. In 2018, the ratio of pharmacy students to social work students was 4:1 but in 2021 the ratio equalized to nearly 1:1 due to changes in pharmacy enrollment. Faculty members from each discipline were assigned to the small groups to serve as facilitators to drive discussion and guide participation. Facilitators were chosen and screened by social work and pharmacy faculty. All facilitators were faculty from their respective schools holding a Doctor of Pharmacy or Master of Social Work degree.

Faculty designed a case study aimed at addressing medication nonadherence in a geriatric patient. The design was meant to encourage students to explore the impact that SDOH has on medication nonadherence.

Prior to the case study, students were given the patient case and asked to arrive prepared to discuss. The IPE small group activities started with a 2-part ice breaker. Part 1 was a "common ground" exercise, where students introduced themselves, then identified a team leader, scribe, and timekeeper. Then, they were tasked with identifying the believed commonalities between their professions.

Part 2 of the ice breaker included a follow-up discussion of what students perceived as their professions' unique qualities. Students were prompted with the following discussion questions:

- What are some of the characteristics, qualities, and roles of each profession?
- When you think of the other profession, describe what characteristics come to mind?
- What are some of the attributes that someone in your profession would need to be successful?

Students across disciplines did not know each other prior to the case study. Ice breakers were used to help create a more relaxed environment where students could share ideas and participate more fully in discussions. Students also used the ice breaker to build rapport and foster a productive learning environment.

During the case study, students were instructed to collaborate and discuss the case using an adapted Rolfe reflective framework of: What? So What? Now What?.[9] The Rolfe reflective framework was selected because reflective practice is recognized as a determining factor in health and social service professionals' skills development as well as in the establishment of good collaboration practices.[10] Students were asked to describe:

- What?: What are you seeing in this case?
- So What?: What about this specific thing is important or significant?
- Now What?: Given the information and its significance, what would you do or what would you recommend? In other words, what happens next?

During the breakout session, groups spent 25 minutes discussing and documenting their responses to the questions. The discussions were not recorded to allow candid and free discussion. To encourage verbal communication, only the scribe was allowed to document responses on Google Forms. Individual and group responses were not anonymous. Group discussions were part of the case study but were not formally analyzed as part of this paper.

In health care, professionals must collaborate and come to a consensus to develop a patient-specific treatment plan. The discussion questions were designed to highlight how students worked together to care for the patient. Following the case discussion, faculty facilitators conducted 10-minute, small-group debriefs. The debriefs consisted of discussions that included the following questions:

Team Goals

- What were your team priorities/goals and how did you arrive at a consensus?

Professional Roles

- What did you discover about the roles of the various professions represented here today?
- How did each contribute to the development of the team plan?
- Did any of your perceptions change after this session? If so, how?

Communication and Conflict

- What communication strategies did the team use? How effective were they?
- What non-verbal communication did you notice from the team? (body language, etc) How could non-verbal communication impact others or the goals of the meeting?
- What conflicts or barriers to communication occurred? How were they managed?

The session concluded with a large group debrief to summarize the activity. A representative from each small group provided their takeaway points learned from the case study.

Table 1 provides an overview comparing the methodology used in the hybrid and fully online formats.

Evaluation Methods

Quantitative Evaluations

After participating in the case study, students were asked to complete 3 evaluation questions. Students were asked about the effect of participating in the case study on their ability to collaborate with an interprofessional team and whether it would affect their future practice, and their satisfaction with their ability to work through the case study. In addition, students completed a pre-post questionnaire called the Interprofessional Collaboration Competency Attainment Survey (ICCAS), a 20-item instrument designed to provide a self-assessment on behaviors associated with patient-centered, team-based, collaborative care.[11] The ICCAS includes 6 domains: communication (5 questions), collaboration (3 questions), roles and responsibilities (4 questions), collaborative patient/family-centered approach (3 questions), conflict management/resolution (3 questions), and team functioning (2 questions). A supplemental question about embracing cultural diversity and individual differences was added from the core competencies of the Interprofessional Education Collaborative (IPEC) panel.[12] All questions used a 5-point Likert scale (1=Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent). The validity and reliability of the ICCAS has been previously reported.[11]

Table 1. Description of Interprofessional Education Activity Case Study Exercise in Years 1 and 2 (Hybrid) and Year 4 (Fully Online).

Case Study Components	Hybrid Session (2019 and 2020)	Fully Online Sessions (2021)
Student and Faculty locations	• Pharmacy students and faculty physically located on 1 campus and social work students and faculty geographically dispersed online	• Campuses were closed, students and faculty were geographically dispersed in their own homes
Prework	• Review the event overview and assigned case.	• Unchanged
Telehealth technology	• Zoom with a main room and breakout rooms • Small group discussions: Social work students were logged into their own zoom accounts and were pre-assigned to breakout rooms. Groups of pharmacy students moved to separate classrooms where they connected to the social work students in the Zoom breakout rooms.	• Unchanged • Small group discussion: All students were logged into their own zoom account and were pre-assigned to Zoom breakout rooms
Scenario activities	• Personal introduction, common ground, roles that we share, and unique aspects of ice breaker. • Geriatric patient case highlighting medication nonadherence and social determinants of health	• Unchanged
Tools to guide the session	• Detailed agenda for session flow and faculty facilitator guidance	• Unchanged
Debriefing	• Small group with interprofessional (pharmacy and social work co-facilitation debriefing. Return to a large group for a summary of lessons learned from the day.)	• Unchanged
Evaluation surveys	• Interprofessional Collaboration Competency Attainment Survey (ICCAS) • University of Hawai'i at Mānoa, Translational Health Science Simulation Center survey (simulation process survey)	• Unchanged

The following IPE activity objectives were based on to the ICCAS domains:

1. Describe the various roles of pharmacists and social workers.
2. Summarize strategies to support other disciplines in the delivery of health care services.
3. dentify potential communication barriers and strategize solutions to overcome them.

Qualitative Evaluations

Additional open-ended questions in the post-survey asked about recommendations for improvement and how they define IPE. Participants responded to open-ended questionnaire items after the ICCAS in all sessions. In year 4, participants also responded to an additional set of open-ended questions as part of the simulation center's process evaluation survey.

Analysis

Quantitative evaluation scores were reported using descriptive statistics with means and standard deviations for each question. *T*-tests were used to compare means of scores between years 1 and 2 (hybrid case study exercise) versus year 4 (fully online case study exercise). *T*-tests were also paired to compare changes in mean ICCAS scores before and after the case study session. Each question was analyzed separately and by domains. *P*-values <.05 were considered statistically significant. All analyses were conducted using SAS software version 9.4 (SAS Institute, Inc., Cary, NC).

Separate authors from pharmacy and nursing, independently coded qualitative responses for major themes. Only items with a response were counted (if a response was left blank, if was left out of analysis). Consensus was achieved by discussing any discrepancies among the coders, with a third author from social work serving as a tie-breaker.

Results

During years 1, 2, and 4, 276 students participated, and complete evaluation data was collected from 231 students (83.7% response rate). Of the 231 students, 166 were pharmacy and 65 were social work students. Pharmacy students participated in the activity as part of their coursework, while social work students participated to supplement their field education experience. Completion of the evaluation used in this analysis was voluntary, and student responses were not linked to personally identifiable information.

Table 2 shows mean values on the 3 evaluation questions for all students, and also compares scores between years 1 and 2 (hybrid exercise) and year 4 (fully online exercise). Evaluation scores were high on all 3 questions. Scores were significantly higher in the fully online group for the question regarding satisfaction with their ability to work through the case study (*P*=.005**)**. There were no differences in scores between hybrid and fully online exercises on students' self-assessment of the effect of participating in the exercise on their ability to collaborate interprofessionally or the effect on their future practice.

Students also completed 21 self-assessment questions using the 20-item ICCAS and 1 question about cultural diversity, using a retrospective pre-post format (**Table 3**). All questions were assessed individually and by ICCAS domains. There were statistically significant improvements in scores for all 21 questions and all domains (all *P*<.001). Only domain scores are shown in the table.

Figure 1 displays total mean ICCAS scores before and after the case study, for all students (N=231), and stratified for those who experienced hybrid training (n=167) and fully online training (n=64). For all 3 year groups, there were significant improvements in scores after training (all *P*<.001). These significant improvements were seen for every question and domain, as well as the total score.

ICCAS domain and total scores (pre, post, and change scores) were compared between students experiencing hybrid training and fully online training (**Table 4**). There were no significant differences in pre scores, but the post domain scores were significantly higher for students who experienced fully online training. Similarly, the change in scores was larger among those who experienced fully online training, although only half of these differences were statistically significant.

The top themes from qualitative results are provided in **Table 5**. The qualitative data includes responses from both hybrid and fully online platforms. Students appreciated learning about the roles of both professions and having the opportunity to collaborate and communicate with another profession. The majority of respondents offered no recommendations for improvement. Technical issues such as better audio and microphones, were identified as recommendations for improvement. Some students requested more background information on the activity ahead of the case study.

Table 2. Evaluation Question Scores After Interprofessional Education Activity Completion, and T-tests Comparing Scores in Years 1 and 2 with Year 4

Questions[a]	All Students (N=231)[b]	Comparing Evaluation Scores (*T*-tests)		
		Hybrid Years 1+2 (N=167)[b]	Fully Online Year 4 (N=64)[b]	*P*- Value
Compared to the time before the learning activities, would you say your ability to collaborate interprofessionally is... (1=Much worse now, 2=Somewhat worse now, 3=About the same, 4=Somewhat better now, 5=Much better now)	4.46 ± 0.62	4.47 ± 0.62	4.44 ± 0.61	.75
How much do you think your participation in this activity will affect your future practice? (1=Not at all, 2=Slightly, 3=Moderately, 4=Very, 5=Extremely)	4.29 ± 0.82	4.26 ± 0.86	4.38 ± 0.72	.33
How satisfied were you with your ability to work through the simulations? (1=Not at all, 2=Fair, 3=Neutral, 4=Satisfied, 5=Extremely satisfied)	4.32 ± 0.71	4.25 ± 0.74	4.52 ± 0.59	**.005**

[a] All questions were asked on 1-5 scale.
[b] Mean+ standard deviation.

Table 3. Interprofessional Collaboration Competency Attainment Survey (ICCAS) Domain and Total Scores Before and After Case Study Training: All Students (N=231)

Domain[a]	Pre Score[b]	Post Score[b]	Change in Score[b]	*P*-Value[c]
Communication	3.66 ± 0.85	4.40 ± 0.61	0.74 ± 0.68	**<.001**
Collaboration	3.40 ± 1.04	4.45 ± 0.64	1.05 ± 0.89	**<.001**
Roles and Responsibilities	3.47 ± 0.93	4.54 ± 0.55	1.07 ± 0.83	**<.001**
Collaborative Patient/Family-Centered Approach	3.41 ± 0.99	4.51 ± 0.58	1.10 ± 0.90	**<.001**
Conflict Management/Resolution	3.93 ± 0.93	4.60 ± 0.57	0.67 ± 0.78	**<.001**
Team Functioning	3.50 ± 1.02	4.51 ± 0.68	1.01 ± 0.91	**<.001**
TOTAL ICCAS SCORE	3.57 ± 0.83	4.49 ± 0.54	0.92 ± 0.70	**<.001**
Embrace cultural diversity and individual differences. (Additional question from IPEC)	3.93 ± 0.99	4.54 ± 0.70	0.61 ± 0.82	**<.001**

IPEC=Interprofessional Education Collaborative Core Competencies.
[a] Participants were asked to rate their ability in a series of competencies on a 5-point scale before and after the training:1=Poor; 2=Fair; 3=Good; 4=Very Good; 5=Excellent.
[b] The competencies were grouped into domains and the combined domain scores (mean + standard deviation) are shown.
[c] Results of paired *T*-tests among all students.

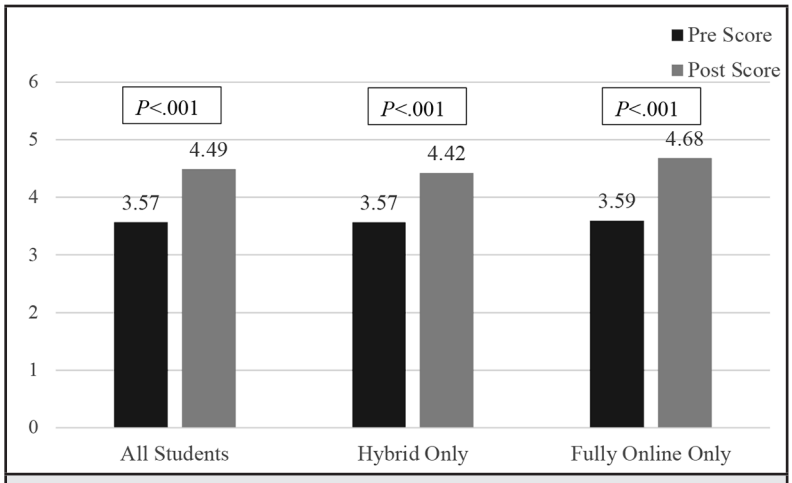

Figure 1. Mean Total ICCAS[a] Scores Before and After Case Study Training[b]

[a] Interprofessional Collaborative Competencies Attainment Survey
[b] Analyses based on a paired T-tests for all students (N=231) and stratified for hybrid training (n=167) and fully online training (n=64).

Table 4. Mean ICCAS[a] Domain and Total Scores Before and After Case Study Training: Paired T-tests Comparing Hybrid Training (n=167) and Fully Online Training (n=64).

Domain[b]	Pre Score			Post Score			Change in Score		
	Hybrid	Fully Online	*P*-Value	Hybrid	Fully Online	*P*-Value	Hybrid	Fully Online	*P*-Value
Communication	3.66 ± 0.85	3.66 ± 0.84	.99	4.34 ± 0.63	4.57 ± 0.54	.011	0.68 ± 0.65	0.91 ± 0.72	.021
Collaboration	3.38 ± 1.06	3.46 ± 0.99	.61	4.36 ± 0.69	4.69 ± 0.39	<.001	0.98 ± 0.84	1.23 ± 0.99	.051
Roles and Responsibilities	3.44 ± 0.93	3.54 ± 0.93	.51	4.46 ± 0.58	4.73 ± 0.41	<.001	1.02 ± 0.8	1.20 ± 0.9	.144
Collaborative Patient/ Family-Centered Approach	3.42 ± 0.99	3.39 ± 1.01	.84	4.45 ± 0.61	4.66 ± 0.49	.008	1.04 ± 0.87	1.28 ± 0.94	.071
Conflict Management/ Resolution	3.93 ± 0.95	3.93 ± 0.91	.99	4.53 ± 0.61	4.78 ± 0.4	.001	0.60 ± 0.73	0.85 ± 0.89	.049
Team Functioning	3.51 ± 1.05	3.48 ± 0.95	.87	4.42 ± 0.74	4.73 ± 0.43	<.001	0.91 ± 0.9	1.25 ± 0.91	.012
TOTAL ICCAS SCORE	3.57 ± 0.85	3.59 ± 0.78	.86	4.42 ± 0.56	4.68 ± 0.4	<.001	0.86 ± 0.68	1.09 ± 0.74	.021
Embrace cultural diversity and individual differences[c]	3.90 ± 1.01	4.00 ± 0.96	.51	4.47 ± 0.74	4.73 ± 0.54	.003	0.56 ± 0.78	0.73 ± 0.9	.153

[a] Interprofessional Collaborative Competencies Attainment Survey.
[b] Participants were asked to rate their ability in a series of competencies on a 5-point scale before and after the training: 1=Poor; 2=Fair; 3=Good; 4=Very Good; 5=Excellent. The competencies were grouped into domains and the combined domain scores (mean + standard deviation) are shown.
[c] Additional question from the Interprofessional Education Collaborative Core Competencies.

Table 5. Qualitative Data Summary of Student Responses after the Case Study Training

Question: How do you define interprofessional education? (n = 168)		
Theme	**No (%)[a]**	**Example Quote**
Teamwork	79 (47%)	"I define interprofessional education as members of different professions working together to learn about each other's profession and build upon their roles and responsibilities."
Patient care	64 (38%)	"I would describe it as being able to work efficiently to give a patient the best care possible in all aspects. As pharmacists we are only able to help a patient so much, but if we work together with other professionals we can ensure quality care for our patients in all aspects of their life."
Collaboration	50 (29%)	"To me, interprofessional education focuses on collaboration with others and recognizing my own limitations as a social worker. It is a good reminder that despite our differences in education and background we all have a common goal when caring for our patients, and we each bring something valuable to the table."
Role Understanding	42 (25%)	"Learning about another profession's responsibilities and scope of work in order to create and provide an optimal care plan that is unique for every patient."
Communication	20 (11%)	"Communicating and collaborating with other healthcare disciplines together for optimal patient care"
Learn Together	10 (6%)	"Learning and working together to grow a relationship with other professions in which we can help improve patients care"
Question: What was the most helpful about this learning experience? (n = 71)		
Theme	**No (%)**	**Example Quote**
Role understanding	38 (53%)	"I think the most helpful thing was identifying what social workers and pharmacists have in common." "I really liked collaborating with the social work students. They brought up topics and perspectives that I wouldn't have thought of previously. It was a very insightful discussion."
Collaboration	15 (21%)	"The most helpful tip was probably being able to communicate with other "professionals" and their ideas and collaborate with them to come up with a solution/solutions for our patient. We both are passionate about helping others, it's our specialties that will help us frame a gateway to get us through the problem by working together."
Communication	15 (21%)	"Being able to work collaboratively with other professionals and communicate effectively. Recognizing each specialty and offering resources from both professions. There were many factors that contributed to this learning experience and I truly appreciate the knowledge that I have gained from this."
Patient Care	10 (14%)	"Speaking with professionals in another public service discipline to gain a new perspective on patient care."
Facilitators	5 (7%)	"Definitely having faculty guide us through." "I really appreciate the smaller discussion groups and really appreciated the facilitators for providing additional input." "Especially for Social Work there is such a wide variety of roles and getting as many perspectives is so beneficial. I also am so appreciative to everyone who participated and the great discussion."

Table 5. Qualitative Data Summary of Student Responses after the Case Study Training (Continued)		
Question: What was the least helpful about this learning experience? (n = 70)		
Theme	**No (%)**	**Example Quote**
N/A; none; nothing	35 (50%)	"All was great!"
Online	8 (11%)	"That it was on Zoom and not in-person. I like in-person activities better."
Communication	4 (5%)	"Knowing when to talk"
Individual, (group dynamics)	3 (4%)	"We didn't really spend that much time as a group and spent more time talking individually."
Preparation	3 (4%)	"Having the questions listed during the Zoom meeting and not prior.?"
Question: How will this learning experience affect your future practice? (n = 71)		
Theme	**No (%)**	**Example Quote**
Role understanding	28 (39%)	"I really had no idea how much social workers had in common with pharmacists until I engaged in this exercise. This really made me reconsider how similar health care professions are to each other, despite our many professional differences."
Patient care	14 (19%)	"It gave me more skills and insight in how I would be responsible for my contribution to patient care in society along with interacting with other healthcare workers."
Teamwork	13 (18%)	"It will help me to understand the value of teamwork in a care team."
Communication	12 (16%)	"It taught me how to communicate competently with another person from a different profession."
Collaboration	9 (12%)	"Greatly help me cooperate effectively with others in and out of the social work profession"
Resources	3 (4%)	"It helped me understand that there are resources that I can use to help care for my patients"
Question: Do you have any recommendations to improve this experience? (n = 191)		
Theme	**No (%)**	**Example Quote**
None needed	80 (41%)	"No, this was great! I really enjoyed this learning experience and I feel like I gained a lot from it."
Technical	29 (15%)	"If we can have better microphones, it was challenging to hear people on Zoom."
Preparation	17 (8%)	"Having questions and background information provided ahead of time"
In-person	15 (7%)	"I think if this was in person it would've built more connections."
Case/more cases/more case detail	9 (4%)	"More case scenarios"
Role understanding	9 (4%)	"Have both sides talk more about their professions and what they do."
Time	8 (4%)	"Maybe have a little more time to focus on individual aspects."

[a] Please note that percentages will not equal 100 because not all comments fit into listed themes and some comments fit into more than 1. Quotes are taken verbatim and have not been corrected for spelling, punctuation, or grammar. Themes that amounted to fewer than 4% are not listed.

Discussion

Previous literature has discussed the potential benefits of interprofessional collaboration between pharmacy and social work. This study's findings are consistent with similar articles that combined more than 2 disciplines.[13,14] However, there is no data that supports IPE case study with pharmacy and social work exclusively. This article adds to existing literature that an IPE case study between these disciplines can improve interprofessional collaboration-related competencies. Specifically, the case study proved successful in introducing students to the roles and responsibilities of each profession. Students reported that this interprofessional activity improved their understanding of the skills, attributes, and expertise of the other discipline while highlighting the importance of interprofessional collaboration. This study supports previously published literature on the benefits of interprofessional collaboration between pharmacy and social work.

This case-based activity was initially conducted as a hybrid case study in 2018 and 2019. In 2020, the activity moved to a fully online case study due to the COVID-19 pandemic and has been online since. The quality of the experience, the perceived ability of the participants to collaborate interprofessionally, and the case study 's impact on their future practice were maintained despite the platform transition.

It is possible the online case study may provide a more impactful experience as students reported greater satisfaction with their ability to work through the case study as compared to the hybrid format. Additionally, students who participated in the fully online case study generally reported better attainment of interprofessional collaborative skills. Alternate explanations for improved results in the online sessions may include years of faculty experience with this particular case study as well as increased student comfort level in virtual learning environments.

Students provided answers to open-ended questions that required them to define IPE in their own words. They also answered questions regarding the perceived impact of IPE on their future as professionals. Generally, students characterized IPE as teamwork, patient care, collaboration, and role understanding. Students also felt this case study would positively impact their future practice by helping them understand each other's roles and collaborating as a team to provide patient care.

Limitations of this study include the loss and exclusion of year 3 data due to question integrity. Student responses in year 3 were reported on a Likert scale of 1 - 10 instead of 1 - 5. Another limitation was the reliance on student self-report. It is possible that self-reported scores do not reflect students' true perspective on IPE growth, but rather depict responses affected by social desirability bias. Finally, this study did not take into consideration measuring alternate explanations that may lead to improved IPE knowledge.

The interprofessional activity started as a hybrid case study before switching to a fully online format. After each session, student feedback was examined, and internal reviews were conducted that resulted in iterative improvements to the learning experience. This may have contributed to the improved scores in the fully online session. Further research is needed to determine if a fully online case study is better than a hybrid format.

Three evaluation questions targeting the effects of participating in the exercise on the students' ability to collaborate interprofessionally, effect their future practice, and satisfaction with their ability to communicate in the case study do not have reliability and validity data. The authors recognize the lack of psychometric data on these questions is a weakness.

Other studies have demonstrated potential benefits to collaboration between social workers and pharmacists.[2–4] However, due to various barriers such as unavailability of other health programs on campus, shortage of learning space, and difficulty scheduling, interprofessional training with these groups is lacking.[4,6] Thus, researchers have called upon educators to address these barriers and to offer more opportunities for IPE.[4,6] To the authors' knowledge, this is the first study to evaluate an interprofessional activity with pharmacy and social work students focused on the benefits of hybrid and online learning experience. The study found there was support from students who felt their interprofessional collaboration-related competencies improved. This study also expanded the realm for where interprofessional case studies can be delivered addressing geographic separation of learners and space constraints.

This study does not address whether students' interprofessional collaboration skills improve as they progress through the curriculum and participate in other IPE events. Future directions should include assessing changes in IPE experience over time.

Conclusion

Regardless of a hybrid or fully online platform, this interprofessional case-based activity promoted interprofessional learning and collaboration among pharmacy and social work students. They successfully worked together in problem solving. This activity also reinforced the importance of teamwork to improve patient care. The impact of SDOH on medication adherence is an area that future pharmacists and social workers will need to work together to ensure optimal outcomes. The complexity in managing medications in patients who are adversely impacted by the SDOH requires a multi-modal approach that is best achieved through interprofessional collaboration. Introducing learners to this type of practice is critical to ensure they are able to work collaboratively in a professional practice environment.

Conflict of Interest

None of the authors identify a conflict of interest.

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