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## The Impact of an International Interprofessional Experience on Perceptions of Pharmacist-Physician Relationships

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## Introduction

The importance of interprofessional education in today's changing health care environment is highlighted and promoted in the Interprofessional Education Collaborative Core Competencies for Interprofessional Collaborative Practice 2016 Update (IPEC, 2016). In 2019, the Health Professions Accreditors Collaborative released a consensus guidance document to "support the development and implementation of quality interprofessional education (IPE)", which has been endorsed by numerous accrediting bodies (HPAC, 2019). With IPE, learners are encouraged to learn about, from, and with each other to enable effective collaboration and promote team-based care. International experiential learning offers a unique opportunity for interprofessional teamwork and can be an avenue to meet the four IPEC core competencies: values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teamwork. Working together in an underprivileged area with unique medical needs and limited resources cultivates an educational opportunity requiring teamwork, ingenuity, and optimization of roles within an interprofessional team. Several studies have addressed pharmacy student participation on medical mission trips (Clements et al., 2011; Flores & Courtney, 2014; Peterson et al., 2017; Prescott et al., 2017; Scopelliti et al., 2014; Smith et al., 2018; Werremeyer & Skoy, 2012). However, there is limited data on the impact of interprofessional collaboration between medical and pharmacy students in this setting (Arif et al., 2014).

Our faculty have offered a one-week elective course at rural clinics in the Dominican Republic for third- and fourth-year medical students for several years but had not previously involved pharmacists or pharmacy students. Our goal was to collect data to assess the impact of adding pharmacy students to this experience. Currently, pharmacy and medical students in our programs are provided interprofessional opportunities in direct patient care settings; however, they have not previously worked together to strategically deliver medical care to under-served patients in an international setting. Third- and fourth-year medical students received credit for the elective course, while fourth year pharmacy students volunteered their time to participate. Medical and pharmacy faculty and medical residents supervised the students. The students met once before the trip to introduce themselves, plan for the trip, package medications, and plan activities for children during clinic days. Pharmacy students prepared guides with indication and dosing information for the medications that were available at the clinics. The team resided in a coastal town where poverty predominates and traveled to surrounding villages to provide free outpatient medical care and essential medications. The team also supplied reading glasses to over 100 patients. The group spent one afternoon at an orphanage providing well child check-ups and donating medical supplies. The team enjoyed free time for networking or leisure activities in the evenings, as well as one day for organized recreational activities. The objective of this study was to assess the impact of this international interprofessional learning experience on perceptions of pharmacist-physician relationships and interprofessional teams. The results will help guide the direction of future interprofessional medical mission trips.

## Methods

This study was a prospective pre- and post-survey of medical and pharmacy students participating in a one week, interprofessional learning experience. Surveys were administered via paper copies at team meetings at the beginning and end of the international medical mission trip. Pre- and post-survey data were paired through a unique, anonymous identifier. Participation was voluntary, and informed consent was implied based on survey completion.

The pre- and post-surveys both included five questions gauging perceptions of interprofessional teams using a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Five additional questions were included on the pre-survey, including previous interprofessional and medical mission experience and motivations for participation. The post-survey included five free response questions asking about the experience, what they learned, and if they would recommend this experience to others, as well as the 10 question Student Perceptions of Physician-Pharmacist Interprofessional Clinical Education (SPICE-R2) instrument to measure perceptions of interprofessional education and collaborative practice. Permission was obtained to administer the SPICE-R2 instrument (Fike, 2013; Lockeman et al., 2017).

Paired responses were included in the final data analysis. Survey responses were reported using descriptive statistics. Additionally, changes in pre- and post-survey responses relating to perceptions of interprofessional teams were analysed using the Wilcoxon Signed Rank test. A *p*-value of <0.05 was considered statistically significant. Statistical analyses were performed in SPSS v24.0 (IBM, Armonk, NY). Other qualitative data and answers to open-ended questions were reviewed by the authors and trends were identified. Due to the small sample size, the data was not formally coded. The study design and survey were approved by the Institutional Review Board.

## Results

Of the 17 participants, 15 were medical students and, two were pharmacy students. All 17 students responded to both surveys. All students reported previous experience with the opposite discipline, and the majority of participants (15) stated they had previous interprofessional experience rounding on inpatient teams, however, only 8 students stated they had previous interprofessional experience in an outpatient setting. Pre- and post-survey results are presented in Table 1. Statistically significant increases were seen in four of five survey questions. The only non-significant change had a median response of “strongly agree” in both pre- and post-survey.

**Table 1.** Survey of Perceptions of an International Interprofessional Experience

	Pre Median (IQR)	Post Median (IQR)	<i>p</i> value
Pharmacists or pharmacy students are an integral part of medical mission trips.	5 (4, 5)	5 (5, 5)	0.035
I have opportunities to network with students of other disciplines.	4 (4, 5)	5 (5, 5)	0.005
Interprofessional teams are necessary in all patient care environments to provide the best care.	5 (4, 5)	5 (5, 5)	0.180
I feel comfortable and confident interacting/communicating with students from other health care disciplines.	4 (4, 5)	5 (5, 5)	0.033
My critical thinking and problem-solving skills are very strong.	4 (3, 4)	4 (4, 5)	0.021
IQR – interquartile range			

The results of the SPICE-R2 demonstrated positive attitudes toward interprofessional teams, with all questions having a median response of “agree” or “strongly agree” (Table 2). All of the statements in the “Interprofessional Teamwork and Team-Based Practice” domain (4 questions total) and one statement in the “Patient Outcomes from Collaborative Practice” domain (3 questions total) had a median score of 5 (interquartile range 5,5).

**Table 2.** SPICE-R2 Survey Results after an International Interprofessional Experience (n=17)

	<b>Median</b>
1. Working with students from different disciplines enhances my education	5
2. My role within an interprofessional team is clearly defined	4
3. Patient/client satisfaction is improved when care is delivered by an interprofessional team	5
4. Participating in educational experiences with students from different disciplines enhances my ability to work on an interprofessional team	5
5. I have an understanding of the courses taken by and training requirements of, other health professionals	4
6. Healthcare costs are reduced when patients/clients are treated by an interprofessional team	4
7. Health professional students from different disciplines should be educated to establish collaborative relationships with one another	5
8. I understand the roles of other health professionals within an interprofessional team	4
9. Patient/client-centeredness increases when care is delivered by an interprofessional team	5
10. During their education, health professional students should be involved in teamwork with students from different disciplines to understand their respective roles	5
Survey responses ranked on a Likert scale of 1 (strongly disagree) to 5 (strongly agree)	

All participants stated they would recommend this type of experience to their peer students. Selected free text answers on the post-survey were especially indicative of the positive effects of this experience:

What did you learn about the other discipline of students?

- Great learning experience to further interprofessional communication, respect, and understanding.
- Pharmacists can be extremely helpful when choosing what meds to use when treating various diseases/conditions.

- I learned so much more about the strengths of each of our professions and how we can best use them to work together.
- We work more efficiently as a team.

What surprised you?

- I was surprised at how much more efficient clinic was with a team of medicine and pharmacy.
- I was afraid that they would be less accepting of my suggestions and of my discipline, but this was not the case.

How will you use what you learned in future practice?

- I feel more comfortable asking questions to pharmacists after this experience.
- I feel like I better understand what physicians need from pharmacists and the information I can provide them that is most useful for them.
- I will network and work closely with other disciplines in my community.

## Discussion

The international interprofessional learning experience described in this study had a positive impact on the perceptions of pharmacist-physician relationship. While all participants had previous interdisciplinary experience through their course of study, a statistically significant difference was seen in nearly every category assessed in the pre- and post-survey. IPEC core competencies were addressed throughout the experience. Increased agreement with the importance of pharmacy participation in the experience, free text responses on the post-survey, and the SPICE-R2 results added insight into the mutual respect offered by different groups of students, a critical component of values and ethics of interprofessional practice. While roles and responsibilities were clearly delineated and matched to skills and knowledge base as part of trip planning, results indicated improvement in understanding of roles on an interprofessional team. Above all, the close working environment of outpatient clinics, team-based approach to patient care, and networking opportunities during leisure time served to improve post-survey scores and addressed IPEC core competencies for interprofessional communication and teamwork.

Our programs intend to continuing offering this learning experience to both medical and pharmacy students on a yearly basis as part of formal week-long courses at both schools. We would encourage other schools to explore offering similar international interprofessional experiences and disseminating their experiences through scholarship. Coordination of the team and delineation of roles before the trip was of importance. Living, eating, and working together as a team for a week naturally leads students to learn about, from, and with each other. We would like to expand our data to include a larger sample size in the future. We would also like to include additional disciplines in the trip such as nursing, social work and occupational therapy. Additional research is needed to determine how this type of educational experience influences the future interprofessional interactions of learners when they graduate and enter practice.

Study limitations include a relatively small sample size with only 2 pharmacy students, although response rate was 100%. This study would be stronger with equal group participation more representative of a diverse population. Regarding the study population, selection bias likely plays a role as participation was not a mandatory educational component for any participant, and 100% of students chose to participate as an “opportunity for

service/missions”. The interdisciplinary approach may be diminished by limiting this to two disciplines. Additionally, the trip is widely reported to be overall an enjoyable experience, and this may have also skewed answers toward a more positive retrospective review in the post-survey. Finally, the SPICE R-2 instrument was only administered after the experience, and baseline scores were not collected. Statistical analysis would have been stronger by doing pre survey, by including multiple disciplines, and by even distribution of participant groups.

### **Conclusion**

An interprofessional medical experience in the Dominican Republic improved the perception of pharmacist-physician relationships for medical and pharmacy students. The experience provided understanding of the other healthcare discipline, an appreciation for the importance of interprofessional teamwork, increased student confidence in communicating with the other discipline, and cultivated interest in future interprofessional collaboration.

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