

Attitudes Towards Incorporation of Interprofessional Education into Student-Run Free Clinics

Hai-Uyen Nguyen,¹ Logan Grant Mills,¹ Swetha Ramamurthy,¹ and Nora Gimpel, MD^{1,2}

¹University of Texas, Southwestern Medical School, Dallas, TX, USA

²Department of Family and Community Medicine, University of Texas, Southwestern Medical Center

Background: Currently at our institution, there are only a few opportunities to interact with other health professions students. The Interprofessional Leadership Committee (ILC) was created to promote interprofessional education on campus and to plan small interprofessional gatherings. It is composed of elected medical and health professions students and has been interested in increasing interprofessional training through the Student-Run Free Clinics (SRFCs).

Methods: The survey population consisted of medical and health professions students at institutions with representatives in the Interprofessional Leadership Committee. The survey was sent to 9 medical and health professions schools, with a total of 1,836 students. Data was obtained using a 19-item web survey administered through REDCap electronic data capture tools.

Results: Overall attitude towards interdisciplinary work was predominantly positive. While 97.9% of participants believe interdisciplinary work is of high importance, less than half of respondents (40.3%) were highly satisfied with their current exposure to working in interdisciplinary teams. The majority of respondents (80.6%) were willing to participate in future interdisciplinary opportunities.

Conclusion: Our analysis has identified an opportunity for medical and health professions schools to address a gap in interprofessional learning opportunities by creating more opportunities to practice working with an interdisciplinary team within the SRFCs.

Interprofessional education (IPE) is an important aspect of preparing medical and health professions students to practice in the real world. It has been shown to improve patient management, increase knowledge of other health professions, and increase willingness to collaborate in future practice.^{1,2} The World Health Organization has identified the importance of IPE and collaborative practice by publishing a framework of action items and ways to improve interprofessional interactions.³ The framework highlights problem-based learning relevant to clinical practice and includes interaction between learners as being critical to the success of IPE.³

The Interprofessional Education Collaborative (IPEC) defined four competencies for interprofessional practice including: Values/Ethics for Interprofessional Practice, Roles/Responsibilities, Interprofessional Communication, and Teams/Teamwork.⁴ While there is significant overlap among the core

curriculum delivered to students of medical and health professions, the content is delivered only in context of each specific profession as opposed to how it could be appropriately applied with a team.⁵ Student-run free clinics offer an excellent opportunity for application of these principles, as programs are working to incorporate more shared learning experiences between medical and health professions students.⁶ Barriers to implementation include differences in curriculum, lack of funding, and need for faculty development in other disciplines.⁵

Currently at our institution, there are only a few opportunities to interact with other health professions students. Medical students engage in a half-day interprofessional summit with other health professions students in their first year and interact with nursing students in a short objective structured clinical examination (OSCE) in their second year. The Interprofessional Leadership Committee (ILC) was created to promote

interprofessional education on campus and to plan small interprofessional gatherings. It is composed of elected medical and health professions students and has been interested in increasing interprofessional training through the Student-Run Free Clinics (SRFCs).

There are six SRFCs that collaborate with our institution, and these clinics have limited interprofessional learning opportunities. In these clinics, the students work together to interview patients, develop differential diagnoses, and draft treatment plans under faculty supervision. Currently, the majority of learners participating in the SRFCs are medical students, and only two of the SRFCs also host physician assistant students and pharmacy students. Pharmacy students also present bimonthly drug reviews to educate medical students, focusing on common primary care diagnoses address in those clinics. Expanding the involvement of health professions learners to more of our free clinics would allow us to increase interprofessional training in a clinical setting. Interprofessional participation in SRFCs has been shown to capture three of the four core IPEC competencies through increasing medical students' awareness of other health professions' roles, improving students' interprofessional communication skills, and helping students learn to work in teams.^{4,7} Early access to IPE has also been shown to be beneficial for health professions learners. A study by Wang et al. showed that nursing students who participated in an interprofessional simulation-based course had significant improvement in knowledge as well as a significantly higher score on the Readiness for Interprofessional Learning Scale compared to nursing students randomized to the traditional education group.⁸ In addition to student benefits, patients who visit interprofessional SRFCs report high levels of satisfaction regarding their multidisciplinary care.⁹

This study was designed as a collaboration between the ILC and free clinic leadership at our institution to identify student interest in participating in the SRFCs. The objectives of this study were to: (1) examine students' attitudes toward interprofessionalism, (2) identify the effect of previous interprofessional experience on students' perceptions and willingness to

participate in interprofessional opportunities offered at our institution, and (3) evaluate medical and health professions students' interest in incorporating more interprofessional education and practice into the SRFCs.

Methods

This project was considered program improvement and classified as non-regulated research by our Institutional Review Board.

Participants: The survey population consisted of medical and health professions students at institutions with representatives in the Interprofessional Leadership Committee. The survey was sent to 9 medical and health professions schools and included a total of 1,836 students.

Instrument: Data was obtained using a 19-item web survey administered through REDCap electronic data capture tools ([Appendix 1](#)).¹⁰ Items on the survey were developed based on the Knowledge, Attitudes, and Practices survey framework and were specifically targeted to assess students' knowledge and attitude towards current interprofessional learning opportunities available in the SRFCs. The instrument included questions addressing characteristics of the medical or health professions programs, year in school, required volunteer hours, required supervision in clinics, interest in volunteering at free clinics, and specific skills hoped to be gained through free clinic service learning. We also evaluated the students' prior experiences and perceptions of interdisciplinary healthcare on a 5-point Likert scale.

Statistical Analyses: Descriptive statistics of the participants and health professional schools were calculated using SPSS 26 and Excel 2008. Descriptive analysis was performed to report participant characteristics. Survey responses were analyzed in two categories: responses from participants with past interprofessional experience and without past interprofessional experience. The knowledge, attitude, and practice survey responses used a 5-point ordinal Likert-scale. Non-parametric Mann-Whitney U tests were used to compare the responses between those with and without prior interprofessional experience.

Results

A total of 1,836 students were contacted through email to participate. One hundred ninety (10.3%) completed the survey. The highest proportion of responses (32.5 %) was from nursing students, followed by 25.1% of responses from medical students (Table 1).

The skills students most frequently reported wanting to learn in an interprofessional environment were (1) hands-on experience in patient care (93.7%), (2) patient education in their respective fields (92.1%), and (3) interaction with other health professionals (83.2%). No significant differences were found for any of the 19 items when comparing between disciplines or program years ($p > .05$) and are not reported.

Table 1. Participant Characteristics.

	N (%)
Participant discipline	
Medical Student	48 (25.1)
Nursing	62 (32.5)
Physician Assistant	41 (21.4)
Physical Therapy	23 (12.0)
Clinical Nutrition	7 (3.7)
Clinical Rehab	3 (1.6)
Other	7 (3.7)
Required service hours	
Yes	22 (11.5)
No	138 (72.3)
Do not know	31 (16.2)
Supervision required	
Yes	100 (52.4)
No	20 (10.4)
Do not know	71 (37.2)

Attitudes Towards Interprofessionalism: Overall attitude towards interdisciplinary work was predominantly positive. While 97.9% of participants believe interdisciplinary work is of high importance, less than half of respondents (40.3%) were highly satisfied with their current exposure to working in interdisciplinary teams. Similarly, only about half (57.1%) of the students felt that they had a high knowledge of the various roles within a team, and 53.4% felt highly prepared to work in an interprofessional team in the future. The majority of respondents (80.6%) were willing to participate in future interdisciplinary opportunities.

The results of the Mann-Whitney U analyses are presented in Table 2. Individuals with prior interprofessional experience ($Mdn = 4.00$) had more knowledge of the roles of other interprofessional team members than individuals with no interprofessional experience ($Mdn = 3.00$; $U = 4397$, $z = 2.567$, $p = 0.010$). Participants with prior experience were more satisfied with their exposure to and the quality of the interprofessional experience than those without experience (see Table 2) Those with prior experience ($Mdn = 4.00$) were also more willing to work with other health professions than those without prior experience ($Mdn = 3.00$; $U = 4647$, $z = 3.276$, $p = 0.001$). Interest in interdisciplinary work and importance of interdisciplinary work did not differ between those with prior experience and those without ($p > 0.05$). However, individuals without prior experience ($Mdn = 5.00$) wanted to participate more in these opportunities than those who had interprofessional experience ($Mdn = 4.00$; $U = 2881$, $z = -2.25$, $p = 0.024$).

Table 2. Mann-Whitney U survey responses in students with prior vs no prior interdisciplinary experience.

Variables	Prior Experience Mean Rank	No Prior Experience Mean Rank	Mann-Whitney U	z-score	r
Knowledge					
Roles of health professionals	101.36	79.94	4397*	2.567	0.298
Prepared to work with other health professions	103.17	75.13	4647**	3.276	0.238
Attitude					
Interest in interdisciplinary work	95.01	96.80	3520	-0.237	-0.017
Importance of interdisciplinary work*	92.75	101.08	3209	-1.608	-0.117
Satisfaction with amount of exposure	102.39	77.22	4538**	2.934	0.213
Willing to participate in interdisciplinary work	90.38	109.09	2881*	-2.252	-0.163
Practice					
Quality of interdisciplinary interactions	102.07	78.08	4494**	2.810	0.204

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Discussion

Students at our medical and health professions schools report overall positive perceptions of interprofessionalism. Almost all participants found interdisciplinary work to be highly important, with no relation to which discipline the participant was studying or whether they had prior interprofessional experience. The majority of participants were also highly interested and willing to participate in interdisciplinary opportunities. These student perceptions reflect high awareness of the merits of interprofessional education in all disciplines.¹¹ However, less than half of the participants reported high satisfaction with the actual amount of IPE opportunities. Only about half of the participants reported high knowledge of the various roles within an interdisciplinary team and felt highly prepared to work in interdisciplinary teams in the future. These results illustrate a broad need for improved interprofessional training across medical and health professions institutions surveyed. This is concerning since working in an interprofessional team is critical to patient care and has been found to improve patient outcomes.¹²

Lack of experience does not seem to detract from students' positive perception of interdisciplinary practice. However, participants with prior experience did report significantly higher knowledge of the various roles of health professionals and higher preparedness to work with these professionals. Prior interprofessional experience was significantly associated with perceptions of high quality interprofessional opportunities and high satisfaction with quantity of interprofessional opportunities, showing that students found value in their previous interprofessional experiences.

Interestingly, participants with no prior interprofessional experience had significantly higher willingness to participate in future interprofessional activities compared to participants with prior experience. Students with no experience may feel it necessary to at least gain exposure to interdisciplinary work and might therefore be more willing to participate in any opportunities that are offered. It is unclear why those with prior interprofessional experience report lower willingness to participate in future

activities, but we speculate that students who already have one interprofessional experience are less inclined to devote what little time they have available to volunteer in SRFCs. Offering earlier opportunities, improving the quality of current opportunities, and incorporating longitudinal interdisciplinary learning into the curriculum via electives in the SRFCs could impact respondents' perceptions and willingness scores.

Nursing students had the highest number of survey responses. This could be explained by nursing students representing the highest proportion of respondents or the fact that there are no nursing students currently involved in the SRFCs of the schools surveyed. The high number of nursing student responses suggests nursing students may be the next group of health professions students to incorporate into the SRFCs.

In our study, many students reported that to volunteer, they require supervision from a licensed practitioner in their profession. This represents a significant barrier to incorporating other healthcare professions in the SRFCs because it requires additional resources and planning for appropriate legal coverage and faculty/staff supervision to protect learners in clinical environments. Additionally, we will need a working model to logistically implement a student-run multidisciplinary clinic that effectively benefits student education while also improving overall quality of patient care.

Limitations: One limitation of this study was the low response rate, a common problem with web surveys.¹³ Since the study was done with a self-reporting survey, it is likely that only students who felt strongly about being involved in interprofessional health clinics responded, which may have biased responses in favor of supporting additional interprofessional learning opportunities. We had a large difference in response rate from healthcare professions with and without representation in the SRFCs at the time of this survey, which could also bias our results in favor of supporting IPE.

Another limitation of the study was that the survey administered was not a validated survey.

This made it more difficult to compare to other studies and discuss the significance of the results. However, the survey has helped to identify potential next steps in implementing other health professions students into the SRFCs at our institution.

Conclusion

Interprofessional education is an increasingly essential aspect of the medical and health professional curriculum that could be incorporated into student-run free clinics. Our analysis has identified an opportunity for medical and health professions schools to address a gap in interprofessional learning opportunities by creating more opportunities to practice working

with an interdisciplinary team within the SRFCs. We found that the majority of students were not satisfied with the amount or quality of exposure they had, but almost all of them highly valued and were interested in opportunities for interdisciplinary practice. Our results highlight the need to both increase the number of opportunities and improve the quality of interactions between students from different medical and health professions schools. By doing this, we can better prepare students for effective interdisciplinary practice in their careers as well as improve the patient care provided in SRFCs.

Appendix 1. Incorporating Interprofessional Education into SRFC Survey Questions.

1. **What health professions school are you in?** (Single choice)
 - a. Medical
 - b. Physician Assistant
 - c. Pharmacy
 - d. Clinical Nutrition
 - e. Nursing
 - f. Physical Therapy
 - g. Dental
 - h. Clinical Rehab and Counseling
 - i. Other, please specify: _____ (Short text response)
2. **What year are you?** (Single choice)
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
 - h. 8
3. **Do you have required volunteer hours to complete your degree?** (Single choice)
 - a. Yes
 - b. No
 - c. I don't know
4. **How many hours are required?** _____ (Conditional if Q3 = "Yes", numerical response)
5. **While in training, do you require supervision to volunteer in clinics?** (Single choice)
 - a. Yes
 - b. No
 - c. I don't know
6. **How interested would you be in volunteering at a free clinic with other health professions students?** (Linkert, Single choice)
 - a. 1 Not interested at all
 - b. 2
 - c. 3 Neutral
 - d. 4
 - e. 5 Very interested
7. **How often would you want to volunteer?** (Single choice)
 - a. Never
 - b. Once a week
 - c. Biweekly
 - d. Once a month
 - e. Bimonthly
 - f. Once a semester
8. **Which of the following would you hope to gain experience with while volunteering? (Mark all that apply.)** (Checkboxes, multiple choices)
 - a. Providing education to patients
 - b. Providing education to other students
 - c. Hands-on experience
 - d. History-taking skills
 - e. Practicing formulating differential diagnoses
 - f. Preventative care

- g. Earning volunteer hours
- h. Learning to interact with other health professionals in a clinical setting
- i. Other, please specify: _____

9. Please list any faculty members you think would be good mentors in a free clinic. (Paragraph free response)

10. Have you engaged with students from other health professions as part of an interprofessional team? (Single Choice)

- a. Yes
- b. No

11. (Matrix, Linkert, Single choice per row)

	1 (Not at all / Poor)	2	3 (Neutral)	4	5 (Very much / Excellent)
How important do you think interdisciplinary work will be for your profession?					
How would you rank the quality of interprofessional interactions you have had as a student?					
How prepared do you feel to work with other health professions in a real world setting?					
How satisfied do you feel with the amount of interdisciplinary exposure you have had?					
If there were more interdisciplinary forms of learning, how willing would you be to participate?					
How much do you know about the roles of other members of the interdisciplinary team?					

12. What role do you expect your profession to play on the clinical interdisciplinary team at the student-run free clinics? (Paragraph free response)

13. Other comments? (Paragraph free response)

References

1. Braun B, Grunewald M, Adam-Paffrath R, et al. "Impact of interprofessional education for medical and nursing students on the nutritional management of in-patients." *GMS J Med Educ.* 2019;36(2):Doc11.
2. Walmsley L, Fortune M, Brown A. "Experiential interprofessional education for medical students at a regional medical campus." *Can Med Educ J.* 2018;9(1):e59-e67.
3. Gilbert JH, Yan J, Hoffman SJ. "A WHO report: framework for action on interprofessional education and collaborative practice." *J Allied Health.* 2010;39 Suppl 1:196-197.
4. "Core competencies for interprofessional collaborative practice: 2016 update." *Interprofessional Education Collaborative.* 2016.
5. Angelini DJ. "Interdisciplinary and interprofessional education: what are the key issues and considerations for the future?" *J Perinat Neonatal Nurs.* 2011;25(2):175-179.
6. Schmitt M, Blue A, Aschenbrener CA, Viggiano TR. "Core competencies for interprofessional collaborative practice: reforming health care by transforming health professionals' education." *Acad Med.* 2011;86(11):1351.
7. Tsu L, Buckley K, Early N, Jackowski R. "Evaluation of multidisciplinary and pharmacy-only student-run clinics on student's perceptions of interprofessional roles." *Curr Pharm Teach Learn.* 2018;10(6):785-794.
8. Wang R, Shi N, Bai J, Zheng Y, Zhao Y. "Implementation and evaluation of an interprofessional simulation-based education program for undergraduate nursing students in operating room nursing education: a randomized controlled trial." *BMC Med Educ.* 2015;15:115.
9. Lawrence D, Bryant TK, Nobel TB, Dolansky MA, Singh MK. "A comparative evaluation of patient satisfaction outcomes in an interprofessional student-run free clinic." *J Interprof Care.* 2015;29(5):445-450.
10. Paul A, Harris RT, Robert Thielke, Jonathon Payne, Nathaniel Gonzalez, Jose G. Conde. "Research electronic data capture (REDCap) A metadata-driven methodology and workflow process for providing translational research informatics support." *J Biomed Inform.* 2009;42(2):377-381.
11. Darlow B, Coleman K, McKinlay E, et al. "The positive impact of interprofessional education: a controlled trial to evaluate a programme for health professional students." *BMC Med Educ.* 2015;15:98.
12. Wolfe H, Zebuhr C, Topjian AA, et al. "Interdisciplinary ICU cardiac arrest debriefing improves survival outcomes." *Crit Care Med.* 2014;42(7):1688-1695.
13. Fan W. YZ. "Factors affecting response rates of the web survey: A systematic review." *Computers in Human Behavior.* 2010;26(2):132-139.