

**THE IMPORTANCE OF INTERPROFESSIONAL COMMUNICATION AS PERCEIVED
BY FIRST-YEAR MEDICAL STUDENTS AND THE INFLUENCE OF EARLY
CLINICAL EXPOSURE UPON THESE PERCEPTIONS**

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Scholarly Project Title: The importance of interprofessional communication as perceived by first-year medical students and the influence of early clinical exposure upon these perceptions

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Abstract:

The importance of interprofessional communication in the clinical realm and the beneficial nature of early clinical exposure for medical students have been well documented in the literature. This study evaluates how the opinions of first-year medical students at the University of Arizona College of Medicine-Phoenix change over the course of the first year in regard to the importance of interprofessional communication. It also aims to discover whether or not students find the two early clinical exposure courses at the College of Medicine to be useful in developing these opinions. This qualitative research study utilizes a survey composed of two free response questions sent out at the beginning and end of the 2018-2019 school year to the Class of 2022. Using thematic analysis, the authors found that many of the themes in responses stayed the same throughout the year. Students appear to particularly appreciate interprofessional communication for its influence in team-based dynamics and high-quality patient care. This study also found that students frequently described one early clinical exposure course, Community Clinical Experience, as influential in developing perceptions about interprofessional communication.

Keywords:

Interprofessional communication, interprofessional education, early clinical exposure, qualitative research, medical education

Introduction:

Medical students are expected to gain a vast amount of knowledge over the course of the four years of medical school in the United States. Perhaps one of the most important skills they develop is effective communication, both with patients and colleagues alike. Prior to graduation, a major goal for the medical students at the University of Arizona College of Medicine-Phoenix is that they learn to “function collaboratively on health care teams that include health professionals from other disciplines” by actively participating in interprofessional education throughout their undergraduate medical education.¹ Collaboration among health care professionals from different specialties is an incredibly important aspect of the American healthcare system especially in light of health care worker shortages, the aging population, and the rapid expansion of scientific knowledge available to physicians.² Researchers have found that students think interprofessional communication is important for effective teamwork as well as critical in understanding and executing their responsibilities as health care providers.³

This study aims to evaluate how the perceptions of first-year medical students at the University of Arizona College of Medicine-Phoenix change in regard to interprofessional communication at the beginning versus the end of the first year of medical school. Additionally, this study aims to determine whether students consider their early clinical exposure courses, Community Clinical Experience and Capstones, to be the most influential experiences in shaping their opinions of interprofessional communication. This is a qualitative research study that utilizes a two-question open-ended survey that was sent out in October 2018 for the beginning time point and March 2019 for the ending time point. Major themes were identified using thematic analysis of the responses from the first and second sets of surveys. The sets of themes were then compared to determine which themes appeared or disappeared over the course of the year. The overall goal of this research is to help illuminate which aspects of interprofessional communication are adequately appreciated by students. The study also aims to show whether or not the early clinical experience courses have a significant bearing upon the opinions of first-year medical students in specific regard to interprofessional communication. Before the results of the study are discussed, it is important to first examine recent findings in the literature as well as introduce the early clinical exposure courses at the University of Arizona College of Medicine-Phoenix.

Background:

Interprofessional Communication

The 2006 article published by Lumague et. al. posits that it can be incredibly challenging for one health care professional to care for all of a patient's needs in clinical practice. Working with professionals from different areas within healthcare is essential in treating a patient completely. Effective interprofessional education is necessary for helping develop this ability to work in a team with others to enhance patient care.⁴ Additionally, it is noted in the Interprofessional Education Collaborative's (IPEC) *Team-Based Competencies: Building a Shared Foundation for Education and Clinical Practice* that the deficit in health care workers will influence the need for interprofessional communication in clinical practice. IPEC states that health care professionals are working amongst "an aging population with multiple chronic illnesses." Interprofessional teams can help to alleviate the burden of individual practitioners managing these conditions alone, especially during this shortage of health care workers. IPEC also proposes that medical knowledge is increasing at such a rapid rate that it has become difficult for individual practitioners to stay afloat.² As such, the necessity of teamwork among health professionals is illuminated. Every team member can utilize their expertise to maintain and share current knowledge with their teammates to increase the level of care received by patients.

Interprofessional Education

In order to provide optimal patient care in the future, health professions students must learn how to properly communicate and collaborate with individuals in professions other than their own throughout their education. Lumague et. al. (2006) found that students in various professional schools perceived many benefits from an interprofessional education experience. Physiotherapy students remarked that they appreciated the ability to show other health care students what their profession contributes to patient care. A pharmacy student noted that the experience allowed them to clarify confusing jargon and remove barriers to effective communication between them and other professionals. Occupational therapy and nursing students stated that they became more comfortable approaching people in different health care professions as a result of the interprofessional education experience.⁴ In *Advancing Interprofessional Clinical Prevention and Population Health Education*, the Interprofessional Education Collaborative (IPEC) posits that some of the recently emerging applications for interprofessional education exist in the areas of prevention of illness and promotion of healthy lifestyles⁵. As promotion of healthy living among patients becomes even more critical, so does the ability of health professionals and students to identify the roles of other professionals in

helping patients achieve wellness. The 2019 systematic review by Dyess, Brown, Brown, Flautt, and Barnes evaluated the results of seven interprofessional education studies that utilized student attitudes as outcomes. The authors found that “IPE activities were an effective tool for improving attitudes toward interdisciplinary teamwork, communication, shared problem-solving, and knowledge and skills in preparation for collaboration with other members of interdisciplinary healthcare teams.”⁶

Early Clinical Exposure

The first two years of medical school in the United States are referred to as the preclinical years, in which students spend the majority of their time learning basic sciences in the classroom and significantly less time in clinical settings. As evidenced by the Best Evidence Medicine Education systematic review conducted by Dornan et al., a number of studies have found that early clinical experiences are beneficial to both medical students and other parties involved. Medical students were shown to develop empathy for the ill, expand their confidence in patient interviews, and improve their communicative skills. This systematic review also found that supervisors of early clinical exposure experiences for medical students were enthusiastic about the prospect of convincing students to enter primary care specialties. Additionally, interactions with first-year medical students were found to be favorable by patients who were seen by these students and the patients felt positively about participating in medical student education.⁷

The qualitative benefits as perceived by medical students themselves cannot be overlooked. Dyrbye, Harris, and Rohren (2018) studied the reflective writing samples of Mayo Medical School students to determine their perspectives regarding their experiences in working with admitted patients during their second year of medical school. Students in this study expressed their enjoyment of their early inpatient experience and felt that it provided an effective avenue of learning. One student even noted that the experience helped keep him or her from becoming too overwhelmed in light of all the stress in medical school. Furthermore, these students felt that these patient encounters were compelling and motivational accompaniments to the basic sciences material that is characteristic of the first two years of American medical education. Another major theme that arose from these student reflections was the benefit of added practice in communicating effectively with patients while maintaining professionalism.⁸ In summary, the role of early clinical exposure in producing effective physicians has been explored extensively in the literature. Various studies have documented the variety of benefits experienced by students when they are exposed to clinical settings and patients during the preclinical years of their medical education.

Interventions in This Study

The preclinical medical students at the University of Arizona College of Medicine-Phoenix take part in two early clinical exposure courses, Capstones and Community Clinical Experience. The University of Arizona College of Medicine-Phoenix website describes Community Clinical Experience (CCE) as a course that “is characterized by an ambulatory care preceptor hosting a student in his or her office one afternoon, generally every other week.”⁹ The students spend the first semester preparing for the experience in the classroom and the subsequent two semesters with their preceptor. The University of Arizona College of Medicine-Phoenix website states that Capstones experiences “provide students with innovative and clinically focused observational learning experiences in hospital, clinic and laboratory settings, which reinforce content from the preceding organ/system-based block.”¹⁰ Finally, the annual Team AZ Summit is a one day event that took place in November 2018. This event brings together first-year students from various health professions, including medical students from the University of Arizona College of Medicine-Phoenix, and seeks to promote interprofessional collaboration.

Methodology:

Subjects

First-year medical students from the University of Arizona College of Medicine-Phoenix Class of 2022 comprised the subject population in this study. Ten students responded to the October 2018 session of the survey. Nine students responded to the March 2019 session of the survey. The response rates were 12.3% and 11.1%, respectively. The survey was approved by the University of Arizona College of Medicine-Phoenix Office of Assessments and Evaluation for distribution to the Class of 2022.

Data Collection

An online survey was created with REDCap, which included the two following, open-ended questions:

1. Why is interprofessional communication important in the clinical setting?
2. What clinical experience has been most influential to your perception of interprofessional communication? Why?

The first round of the survey was sent out to first-year medical students using the Class of 2022 Listserv early during their first year on October 15, 2018. The survey was closed on

October 31, 2018. The second round of the survey was sent out toward the end of their first year on March 4, 2019, and closed on March 18, 2019. The first capstones experiences for the Class of 2022 occurred during the weeks of 10/1/18 and 10/8/18. The students began seeing patients through Community Clinical Experience starting on the week of 1/7/19, in-between the first and second rounds of the survey. Data was completely de-identified and stored in REDCap.

Statistical analysis

Thematic analysis was performed upon both sets of responses gathered from this study. The analysis of both sets occurred on 4/9/19. Each response was read carefully by the three researchers separately and overall themes were identified based on the responses. The researchers then reviewed and determined a list of similarly identified themes. The themes from the beginning of the year data were applied to the data from the end of the year to see if any additional themes arose in the latter data set. It was also noted whether or not students mentioned the two early clinical exposure programs, Capstones and Clinical Community Experience, in their responses without prompting.

Ethical Considerations

This research project received IRB approval from the Human Subjects Protection Program at the University of Arizona on August 28, 2018, under protocol number 1808893807. The surveys were sent out via email and were completely voluntary to submit. Students were given a document detailing information about the project and consented to the research by filling out the survey. Data for this study was stored in REDCap. This project was completed at the University of Arizona College of Medicine-Phoenix under the supervision of Lee Anne Denny, M.D.

Results:

Overall Themes

The first set of responses from October 2018 contained six overall themes that participants including in their responses. These themes are high-quality patient care, clear communication, team-based experiences, patient safety, provider stress and burnout, and resources for patients. The second set of responses from March 2019 included five of the same themes from the first set of responses: high-quality patient care, clear communication, team-based learning, patient safety, and provider stress and burnout. An additional theme arose from the March 2019 set of responses, which was valuing other people. Table 1 shows the number of participants displaying elements of each theme in their responses.

High-Quality Patient Care

In October 2018, eight respondents described interprofessional communication as essential to providing high-quality patient care in their responses. One respondent noted that interprofessional communication is necessary “to provide comprehensive and complete care for the patient.” Another participant said that “pooling the strengths of multiple providers allows for a comprehensive treatment plan for the patient.” Furthermore, another student said that “[t]he health of a patient will benefit from interaction between multiple health care specialists.”

In March 2019, seven respondents described interprofessional communication as being a key element to providing high-quality patient care in their responses. A participant said that “[i]nterprofessional communication allows different perspectives and more holistic care for patients.” Another student said that communication between different health professionals helps to “ensure the patient receives the best possible care and [the] care is efficient and effective.” Finally, a student said that “interprofessional communication is important because without it, the patient suffers.”

Clear Communication

In October 2018, two respondents discussed the importance of interprofessional communication as it relates to clear communication. One student said that “communication between specialists is important so information is not lost or misunderstood.” Next, a participant said that “ideal communication keeps everyone on the same page, informed, up-to-date and better equipped to make vital decisions.” In March 2019, two respondents included elements of clear communication in their narratives. One student said that “[i]t is important to be able to communicate efficiently and respectfully.” Another student discussed the possible adverse outcomes of poor communication by saying that by “not communicating effectively, information can get lost or misconstrued, and the patient’s health can be put at risk.”

Team-Based Experiences

In the October 2018 round of surveys, eight respondents discussed elements of team-based approaches as they relate to interprofessional communication. A participant noted that “[o]ne individual alone likely does not have all of the expertise and specialized knowledge to best provide for the needs of a patient.” Another respondent said that “[o]nce we become physicians, we will be treating our patients as a team effort alongside a plethora of other medical professionals.” Additionally, another individual noted that they believe “a patient needs a team of professionals each with their expertise and this team needs to communicate to provide the highest quality of care.”

For the March 2019 set of surveys, eight respondents also discussed teamwork in relation to interprofessional communication. One respondent discussed how interprofessional communication allows “people with diverse training backgrounds to come together and work as a more effective unit.” Another respondent stated that “each team member brings something important to the table.” Furthermore, another respondent stated that “interprofessional communication is important because no one is going to be able to do everything alone once we get to the clinical setting.”

Patient Safety

In October 2018, two students included elements of patient safety in their narratives about the importance of interprofessional communication. One participant said that quality communication is necessary because “wrong or fatal decisions might be made simply because information was not known.” Another student discussed specifically how various other professionals interact with physicians. For instance, help from a pharmacist would be useful for “assistance with medication” or a nurse may observe “a certain symptom” that a physician did not. For the March 2019 set of surveys, three respondents discussed patient safety in their narratives. A respondent noted that “multiple professional viewpoints [can] pick up information [that] a single person may miss.” Another student noted that interprofessional communication is needed “to ensure patient safety.”

Provider Burnout and Stress

One respondent from each round of the survey discussed provider burnout and stress as they apply to interprofessional communication. The respondent from the October 2018 set of responses stated that interprofessional communication creates “[an] ideal environment, possibly with enjoyment, without stress, and something that doesn’t lead to professionals burning out.” The respondent from March 2019 stated that an environment without interprofessional communication would “be a toxic environment [that] is detrimental to everyone working there and every single one of the patients.”

Resources for Patients

Three respondents from the first set of surveys in October 2018 discussed how interprofessional communication relates to distributing resources for patients. One respondent said that “[e]ffectively caring for a patient requires the collaboration of skills and resources among different healthcare professionals.” Another participant stated that interprofessional communication “also allows for a broader set of resources to be applied to any given problem.” Finally, a student discussed how interprofessional communication helps us “continue to learn

more about the many other resources we can offer our patients.” No students from the second set of surveys included mentions of resources in their narratives.

Valuing Other People

The “Valuing Other People” theme is the only one that arose in the second set of surveys after being absent in the first round of surveys. Three participants from the March 2019 group of respondents discussed how interprofessional communication relates to valuing the contributions of others. One respondent stated that respectful communication allows “each team member [to feel] comfortable enough to speak up.” Another participant said that “each team member has valuable contributions that can only be gleaned if each person takes turns listening and respecting the opinions of their colleagues.” Finally, another respondent stated that in order to provide effective healthcare, team members must “be humble and accept/ask for help from other professions.”

Table 1 Prevalence of Themes Among Respondents

Theme	Number of Respondents Demonstrating Each Theme in October 2018 (%) n=10	Number of Respondents Demonstrating Each Theme in March 2019 (%) n=9
High-Quality Patient Care	8 (80%)	7 (77.8%)
Clear Communication	2 (20%)	2 (22.2%)
Team-Based Experiences	8 (80%)	8 (88.9%)
Patient Safety	2 (20%)	3 (33.3%)
Provider Burnout and Stress	1 (10%)	1 (11.1%)
Resources for Patients	3 (30%)	0 (0%)
Valuing Other People	0 (0%)	3 (33.3%)

Early Clinical Experiences

The Community Clinical Experience (CCE) course was mentioned in 4 out of 9 responses during the second round of surveys in March 2019. Actual clinical rotations with preceptors had not begun at the time of the October 2018 survey, so it was expected that it would not be listed as influential in any responses. One respondent who discussed CCE said that they “get to see the relationship between doctors, nurses, and office workers” at their CCE site. Another participant said that they “see doctors and medical assistants working together” during their CCE days. Another student listed CCE as influential because they “get to see how

[interprofessional communication] takes place in a clinical setting every time [they're] there.” Finally, another student shared that their “preceptor sees many patients a day in a very busy office and could not by any means do it without all the other staff at the office.”

The capstones experiences were described as influential one time in each of the sets of surveys. In the October 2018 survey, one student stated that “capstones and basically any other clinical experience [show] me how interprofessional communication works because all of [them] are team-based.” In the March 2019 survey, a student said that their “Capstone in the PCH CVICU has most influenced [their] perception of interprofessional communication because [they] saw how rounds/grand rounds allows the team to meet, share ideas, and collaborate in the care of each patient.” Finally, the Team Arizona Summit was listed as influential once in the second set of surveys. It was anticipated that it would not be listed in the first set since it had not occurred yet at that point in time. The student stated that “the Team Arizona Summit Event hosted in November provided a good opportunity to show the value of interprofessional communication and collaboration with a complex patient case.”

Table 2 Participants Discussing Early Clinical Experiences in Their Responses

Early Clinical Experience	Number of Respondents Citing Each Experience in October 2018 (%) n=10	Number of Respondents Citing Each Experience in March 2019 (%) n=9
Community Clinical Experience	0 (0%)*	4 (44.4%)
Capstones	1 (10%)	1 (11.1%)
Team Arizona Summit	0 (0%)*	1 (11.1%)

Note: Clinical rotations in Community Clinical Experience did not begin for the first-year medical students until January 2019, so 0% responding is expected. The Team AZ Summit for 2018 took place in November, so the 0% response here is also expected.

Discussion:

The qualitative responses from the Class of 2022 at the University of Arizona College of Medicine-Phoenix have revealed critical information about how students perceive interprofessional communication throughout their first year of medical school. Five major themes persisted from one set of the survey to the next: providing high-quality patient care, developing clear communication, participating in team-based experiences, enhancing patient

safety, and combating physician burnout. One theme, finding resources for patients, was present in the first round of surveys and was no longer present in the second round of the surveys. Finally, the theme of valuing the contributions of other individuals arose only in the second set of surveys. Overall, it appears that major themes are consistently present throughout the first year of medical school, with a few themes appearing and disappearing. The most prevalent themes are the high-quality patient care and team-based experiences themes, which were both present in the majority of responses during both rounds of the survey. Students cite interprofessional communication as being important for working effectively with other team members and for task delegation. Additionally, students report that interprofessional communication is necessary to provide the totality of care patients need and to prevent patient harm incidents.

The students in the study were also asked to discuss which clinical experiences have been the most influential in developing their opinions about interprofessional communication. The researchers were specifically evaluating whether or not students would discuss the two early clinical exposure courses, Capstones and Community Clinical Experience. One student from the October 2018 survey and one student from the March 2019 survey discussed Capstones experiences as being influential to their appreciation of interprofessional education. Capstones experiences were specifically cited as examples of how they saw team dynamics at work in the clinical realm. Four students in the March 2019 survey discussed their longitudinal Community Clinical Experience course as being a prominent factor in shaping their perceptions of interprofessional communication. Students stated that the Community Clinical Experience course included instances in which they experienced collaboration between members of various health professions. One student also discussed how the Team Arizona Summit, an interprofessional education event, helped them appreciate the importance of communication among members of different health professions.

Overall, this research has revealed some important insights into how University of Arizona College of Medicine-Phoenix students perceive interprofessional communication and education. It is clear from the responses that students find value in interprofessional communication in such major areas as being able to provide high-quality patient care and work effectively in teams. This study also showed that students find the Community Clinical Experience longitudinal course to be influential in shaping their opinions of interprofessional communication. As far as future policy modifications are concerned, one idea is to integrate additional elements of interprofessional education curriculum into the Community Clinical Experience course, as students appear to appreciate this course for its value in interprofessional communication. For instance, adding a reflection piece on communication they have witnessed

in their clinical sites would help join the Community Clinical Experience course with the interprofessional education longitudinal theme.

While this study certainly sheds light on the perceptions of first-year medical students in regard to interprofessional communication, it is important to recognize that the study also has some limitations. This research was conducted at the University of Arizona College of Medicine-Phoenix only. Early clinical experiences are common among medical schools, however, this study specifically evaluated whether students have been influenced by the Community Clinical Experience and Capstones courses. Additionally, the qualitative nature of this study possibly resulted in a smaller yield of participants at ten participants and nine participants for each round of the survey, respectively. The participants were not tracked from one round of survey to the next, so their identities are completely unknown. The aggregate themes from each set of responses were treated as separate entities representative of the class' opinion at different points in time. If this research were to be repeated or a similar study were to be done, a suggested improvement would be to make it more generalizable to other schools by surveying students across the United States if possible. A future widespread study that addresses the relationship between interprofessional education and early clinical exposure would be valuable since this research focused specifically on the University of Arizona College of Medicine-Phoenix.

Conclusion:

In summary, this study sought to discover how first-year medical students' perceptions of interprofessional communication changed throughout the first year of medical school. An additional goal of this study was to determine whether or not students would cite the early clinical exposure courses, Capstones and Community Clinical Experience, as influential in shaping these perceptions. The study was survey-based, with one round of the survey being sent out in October 2018 and the follow-up survey being sent in March 2019. The students' qualitative responses were analyzed via thematic analysis. It was apparent that students appreciated a wide variety of themes in regard to communication among clinicians, namely team-based dynamics and providing high-quality patient care. The themes stayed largely the same from one round of the survey to the next, with five themes being present in both sets. The study also found that the Community Clinical Experience course was the most commonly described influential clinical experience. Overall, this research has shown that students are gaining experience with interprofessional communication at the University of Arizona College of Medicine-Phoenix, even during the preclinical years. It has shown that the Community Clinical Experience course is a potential avenue of expansion for the interprofessional education

curriculum, since students cited it as an influential source of learning about communication. Furthermore, this study has illuminated a need for more generalizable research into how interprofessional education relates to early clinical exposure.

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Declaration of Interest:

The authors have no conflicts of interest and submit yearly conflict of interest reports to the University of Arizona.

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