



Analysis of an Interprofessional Home Visit Assignment:

Student Perceptions of Team-Based Care, Home Visits, and Medication-Related Problems

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BACKGROUND AND OBJECTIVES: Interprofessional education (IPE) is recommended by many as a means by which to prepare clinicians for collaborative practice and a mechanism by which to improve the overall quality of health care. The objective of this study was to determine the impact of an interprofessional medicine-pharmacy student home visit experience on students' self-assessments of skills and abilities related to team-based care and identification of medication-related problems.

METHODS: Third-year medical and fourth-year pharmacy students completed an interprofessional home visit centered on identification of medication-related problems. Students were surveyed before and after the IPE assignment to assess changes in self-assessed skills and abilities. Survey items consisted of Likert-type statements on a 5-point scale (1=strongly disagree, 5=strongly agree) and free-text responses. Students also completed reflection papers regarding their experiences.

RESULTS: Twenty-two medical and 20 pharmacy students conducted medication-focused interviews of 22 patients at home as interprofessional teams. Medical and pharmacy student self-assessments of skills and abilities related to team-based care and identification of medication-related problems improved after completion of the assignment. Both groups of students perceived an improvement in confidence regarding communication skills, both with patients and with other health professions students. Changes were reported on 12 survey items. Student feedback on the IPE experience was positive.

CONCLUSIONS: Students' self-perception of skills and abilities related to interprofessional team-based care and identification of medication-related problems are improved after IPE medication-focused home visit assignment. Student feedback supports the value of interprofessional patient care clinical experiences.

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be incorporated into student clinical experiences. There is little published literature regarding IPE home visits, and none reported changes in student abilities relating to interprofessionalism.¹¹⁻¹³ Our objectives were to evaluate changes in student attitudes and self-assessed skills and abilities related to interprofessional team-based patient care, home visits, and identification of medication-related problems after completion of a pilot IPE home visit assignment.

Methods

East Tennessee State University (ETSU) family medicine clinics, located in East Tennessee and Southwest Virginia, are clinical clerkship sites for the Quillen College of Medicine and the Gatton College of Pharmacy. All third-year medical and fourth-year pharmacy students in clinical clerkships at these sites between October 2011 and March 2012 were required to complete a medication-focused IPE home visit assignment. The assignment was discussed with students during medical and pharmacy student site orientations,

Interprofessional education (IPE) has been promoted as a means to prepare health professions students for collaborative clinical practice and to improve the overall quality of health care,¹⁻⁸ though it continues to be an underutilized component of health professions

education.⁹ The Liaison Committee on Medical Education (LCME) recently approved Accreditation Standard ED-19-A, which states that medical core curriculum must prepare medical students to work as part of an interprofessional team.¹⁰ We hypothesized home visits are a tool by which IPE may

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at which time pre-visit surveys were administered. Medical-pharmacy student pairs were instructed to identify a patient they deemed at risk for medication-related problems and subsequently scheduled a home visit. Students were provided with a medication-related problem interview guide. Student teams traveled to the patient's home to conduct a medication-focused interview, accompanied by a clinical pharmacy preceptor (PharmD). Following the home visit, student teams discussed potential medication-related problems with a clinical pharmacist preceptor, wrote a SOAP note for review by the patient's family physician, and completed an individual reflection paper. Post-visit surveys were completed at the student's discretion after completion of the assignment and returned either to a preceptor or to the professional program administrative offices. Student surveys captured self-assessments of skills and abilities related to interprofessional team-based patient care, home visits, and identification of medication-related problems before and after the IPE assignment. Survey items consisted of Likert-type statements on a 5-point scale (1=strongly disagree, 5=strongly agree) and free-text responses. Surveys were voluntary, and no individual part of the assignment was graded, though completion of the home visit was required for the clinical clerkship to be deemed "complete." This research was approved by the ETSU Institutional Review Board.

Data Analysis

Student survey data was analyzed using Mann-Whitney U independent samples test to compare results between groups before and after completion of the assignment. IBM SPSS software was utilized for statistical analysis (version 19.0, August 2010, IBM, Armonk, NY). Free-text survey responses and reflection papers were reviewed for recurring themes.

Results

Student Surveys

A total of 22 unique patients were visited at home by medicine-pharmacy student pairs. Twenty-two medical students and 20 pharmacy students completed the home visit as an interprofessional pair. Two pharmacy students completed two visits, each with a unique patient and medical student. These two pharmacy students only completed one pre- and post-visit survey (after their first visit). Forty-eight students completed pre-visit surveys, but eight medical students were unable to complete the home visit with a pharmacy student partner due to scheduling conflicts, and these eight post-visit surveys were not included in the results. When compared to each other, medical and pharmacy student groups rated their skills and abilities differently before and after the assignment on several survey items, with pharmacy students expressing more confidence overall, but both groups indicating an increased level of confidence after completion of the activity ($P<.01$). When survey results for all students were compared, 12 survey items were significantly different ($P\leq.01$ for all), all reflecting improvement in self-rated skills and abilities (Table 1). Six common survey items reflected significant improvement for both medical and pharmacy students. Students reported a high degree of satisfaction with the IPE home visit assignment and consistently rated their experience to be valuable. The most commonly encountered comments in the free-text portion of the student post-visit surveys are listed in Table 2. Students frequently stated they would recommend the interprofessional home visit experience to other students.

Student Reflections and Free-Text Survey Responses

Student comments were generally positive and contained many common themes (Table 2). Students frequently commented on an enhanced appreciation of the patient perspective and impact of home

environment on health. Several students commented on the value of interprofessionalism and how the assignment affected their perceptions of the value of interprofessional teamwork. Many students relayed shock or surprise about the number and severity of medication-related problems that were identified. Student reflections consistently regarded the IPE home visit assignment as a valuable educational experience.

Discussion

This was a pilot project intended to assess the feasibility and perceived value of an IPE home visit and to assist in future planning and implementation. Some methodological weaknesses are present, including the small sample size, lack of a control group, and the assessment of student perceptions about their skills and abilities rather than a direct measure of those skills and abilities. The survey tool utilized was also an untested pilot. In spite of these limitations we found our results to be interesting and worth sharing with others who may be contemplating a similar program. Our results indicate that student confidence in their communication skills, both with patients and with other health professions students, was significantly improved after completion of this IPE home visit assignment. Students also reported an improvement in skills related to identification of medication-related problems. Student reflections and free-text survey comments were overwhelmingly generally positive.

There were some challenges to implementation of the IPE activity that are worthy of discussion, including coordination of student schedules across two different academic programs and three separate practice sites. This challenge was mentioned by several students in the free-text survey responses. We intended that medical-pharmacy student pairs would formally present their patient cases to their student colleagues and preceptors at an interprofessional group meeting during the clerkship

Table 1: Significant Differences in Student Self-Rated Abilities and Attitudes, All Students, Pre- Versus Post-Assignment*

	Likert Score Mean (Median), Pre-Survey (n=48) ^{****}	Likert Score Mean (Median), Post-Survey (n=39) ^{****}	P Value ^{**}
Domain: Feelings toward interprofessionalism			
Physicians and pharmacists should work together as a team to care for patients.	4.00 (4)	4.68 (5)	<.001 ^{***}
The home visit (will help/helped) me learn skills important for working as part of an interprofessional team.	4.02 (4)	4.38 (4)	.011
Domain: Ability to work in/understanding of roles within an interprofessional team			
I have a good understanding of the roles of physicians and pharmacists within the interprofessional team.	4.06 (4)	4.41 (4)	.003
I am confident in my ability to work with a pharmacy student/medical student in the care of patients with chronic illness.	3.53 (4)	4.43 (4)	<.001
Domain: Ability to identify and/or communicate potential medication therapy-related problems			
I am confident in my ability to view a patient's medication list and problem list and identify potential medication therapy-related problems.	3.44 (4)	4.08 (4)	.001
I am confident in my ability to counsel a patient about appropriate use of their medications and potential side effects.	3.45 (4)	4.16 (4)	.001
I am confident in my ability to perform medication reconciliation.	3.65 (4)	4.19 (4)	<.001 ^{***}
Domain: Appreciation of patient perspective			
This experience will help/helped me appreciate the impact of a patient's health on their everyday life.	4.04 (4)	4.54 (5)	.001
I am confident in my ability to include patient input when making a plan for their care.	3.19 (3)	4.32 (4)	<.001 ^{***}
Domain: Communications skills			
I am confident in my ability to provide effective patient education about their health problems.	3.56 (4)	4.35 (4)	<.001 ^{***}
I am confident in my ability to conduct a medication-focused patient interview with a patient.	3.35 (4)	4.27 (4)	<.001 ^{***}
I am confident in my ability to discuss goals of therapy with a patient.	3.60 (4)	4.38 (4)	<.001 ^{***}

* Five-point Likert scale (1=strongly disagree, 5=strongly agree)

** Mann-Whitney U rank sum independent samples test

*** These six survey items continued to be significantly improved for each group when medical student and pharmacy student results were analyzed individually

**** Pharmacy students: Two of 20 did not return the pre-visit survey, and three of 20 did not return the post-visit survey. Medical students: Eight of 30 did not complete the IPE portion of the assignment, these eight post-visit surveys were not included in the results.

experience, but scheduling difficulties precluded this from taking place in most cases. Some students commented on the desire to have more prior contact with the patient before the home visit, as in some cases only one member of the student team had contact with the home visit patient prior to the visit. Though this did not prevent the activity from being valuable for students, it may have been

more meaningful if both students had contact with the patient prior to the visit for a more holistic or longitudinal experience. Preceptors did not set a time limit on student interactions with patients in the home, but students were advised to attempt to complete the home visit in no more than 1 hour. As our clinic census lives in a predominantly rural area, in some cases travel time to

the patient's home was lengthy, and the overall time spent by students traveling and conducting some of the visits was unrealistic for routine implementation, which highlighted the need for more specific predetermined patient selection criteria. In spite of the operational challenges this IPE assignment presented, we conclude that it is a worthwhile and valuable experience for our students,

Table 2: Free-Text Survey Results of Medical and Pharmacy Students, Post-Assignment, Common Themes

Free-Text Questions	Most Common Student Comments (n=22 Medicine Students, n=17 Pharmacy Students)*
What was the most valuable thing you learned?	<ul style="list-style-type: none"> • Importance of home environment on patient health status (4 medicine, 6 pharmacy) • Importance of interprofessional relations between physicians and pharmacists (4 medicine, 1 pharmacy) • Presence of disparities between medical record and care plan being implemented by patient at home (3 medicine, 2 pharmacy) • Improved communication skills (0 medicine, 2 pharmacy) • Other comments (5 medicine, 4 pharmacy) • No comments (6 medicine, 2 pharmacy)
Was there anything that surprised you or you did not expect?	<ul style="list-style-type: none"> • Condition of the home environment (4 medicine, 3 pharmacy) • Disparities between medical record and care plan being implemented by patient at home (3 medicine, 2 pharmacy) • Effectiveness of physician/pharmacy team (1 medicine, 1 pharmacy) • Other comment (3 medicine, 4 pharmacy) • No comment (11 medicine, 7 pharmacy)
What was the worst part of this assignment?	<ul style="list-style-type: none"> • Scheduling of the home visit (3 medicine, 3 pharmacy) • Time to complete assignment too great (2 medicine, 0 pharmacy) • Writing the reflection paper (1 medicine, 1 pharmacy) • No comment (16 medicine, 13 pharmacy)
What would have made this experience better?	<ul style="list-style-type: none"> • Improve scheduling issues (4 medicine, 3 pharmacy) • Provide example of completed SOAP note (3 medicine, 1 pharmacy) • No comment (15 medicine, 13 pharmacy)
Would you recommend this experience to other students?	<p>Yes = 14 medicine (63.6%), 17 pharmacy (100%) No = 1 medicine (4.5%), 0 pharmacy No answer = 7 medicine (31.8%), 0 pharmacy</p>
Why yes?	<ul style="list-style-type: none"> • Value of interprofessional teamwork (2 medicine, 4 pharmacy) • Appreciation of patient perspective (2 medicine, 4 pharmacy) • Value of medication reconciliation (2 medicine, 2 pharmacy)
Why no?	<ul style="list-style-type: none"> • Too pharmacy focused, would have preferred to work with a medical resident (1 medicine)

* Three (of 20 total) pharmacy students did not return post-visit surveys.

and we would like to implement a modified version in the future. We conclude that an interprofessional home visit assignment is a well-received and valuable educational experience for medical and pharmacy students that may enhance communication skills. Operational challenges, particularly coordination of student clerkship schedules, require careful interdepartment program cooperation and planning.

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