Interprofessional Collaborative Practice to Improve Patient Outcomes: A Pilot Study

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ABSTRACT

This project focused on a pilot project implemented during the 2013-2014 academic year. The overall purpose was to facilitate interprofessional collaborative practice innovations through the development of leadership, core competencies, and the use of technology, especially among nurses. Nursing, medicine, and physician assistant students were educated on the IOM competencies for interprofessional teams and the core competencies identified by the Interprofessional Education Collaborative Expert Panel [1] to develop knowledge, skills, and attitudes needed to practice in the collaborative practice environments. The project addressed four goals: Develop faculty expertise and leadership in interprofessional collaborative practice to provide a current, high quality education to nursing, physician assistant, and medical students; Implement a culturally responsive and respectful collaborative interprofessional practice curriculum to prepare nurses, physician assistants, and medical students to deliver high quality, efficient, team-based care in a dynamically evolving environment; Focus interprofessional collaborative practice education on models and practices that lead to improvement in patient outcomes; and Evaluate the program and disseminate best practices. Findings from this pilot include strategies to engage different health professions' students and faculty, partnering with community agencies, building an effective interprofessional team to guide the project, and seeking funding for extension and expansion of the offerings.

Keywords: Interprofessional Education, Interprofessional Practice, Community-based Learning, Team-based Collaboration

1. INTRODUCTION

Interprofessional collaboration in health care is now considered a high priority. Patients have complex needs that require multiple health care disciplines. Safe and effective care in today's dynamic healthcare environment requires an interdisciplinary healthcare team approach. The Institute of Medicine (IOM) Committee on Quality of Health Care in America [2] recommended that healthcare professionals work as teams in order improve interprofessional communication and address the complex and challenging needs of today's population.

In 2009, six health care educational associations developed a collaborative agreement to advocate for and support endeavors to advance interprofessional learning experiences and prepare future clinicians for quality team-based healthcare. From this collaborative agreement, the Core Competencies for Interprofessional Collaborative Practice were developed to improve health care and reduce medical errors in the United States. These core competencies provide the framework for curriculum development for all institutions, preparing health care professions [3].

Interprofessional Education (IPE) prepares the healthcare student with the competency to share values, skills, and knowledge ultimately leading to an increase respect for other professional roles [4]. However, a well-designed participative approach to IPE is mandatory before positive results are noted and transitioned from curricula into practice [1, 2]. Effective IPE within health care educational institutions requires a strategic approach to ensure permanence and sustainability.

The literature indicates a variety of evidence relating to IPE courses and student learning experiences denoting an increase within the United States. This information suggests that IPE is increasing in frequency and innovation [5; 6; 7; 8; 9; 10]. IPE allows students to acquire important skills, resulting in becoming a more effective interprofessional team member, both in the classroom and in the clinical setting.

2. LITERATURE REVIEW

Numerous studies have been conducted to identify research designs and strategies that effectively study the ongoing

challenges of defining IPE and its critical components. Begley [11] stated that the facilitated classroom enables students to discuss ideas with other professional students in a safe environment. Reeves et al. [9] identified 6 studies related to effectiveness and conducted a systematic review to compare IPE to conventional didactic education. This review had been conducted ten years prior with no studies meeting the inclusion criteria. The inclusion criteria for both studies consisted of meeting common variables such as the occurrence of inter-professional exchange, education intervention, practice, process, and satisfaction outcomes. Additionally, included studies must have been objectively measured with a valid instrument using a reliable research design. Findings from the review indicated that two of the six studies reported positive outcomes, two reported both positive and neutral effects, and two reported that IPE interventions had no effect on outcomes targeted at health care processes or patient health care. Reeves et al. [9] concluded that there is still a limited understanding of the effects of IPE and how desired outcomes are achieved. This limited understanding is attributed to the differences of the methodology and type of interventions of each study. Another plausible reason is the dearth of available literature on IPE.

A more recent systematic review conducted by Lapkin, Levett-Jones, and Gilligan [8] had very much the same conclusions. The aim of this review was to identify the best evidence of effective educational university-based interventions. Nine studies were identified and analyzed. In four of the studies, the control group and the experimental groups received different educational interventions. The remaining five studies were similar in structure. The control group received the educational interventions from one professional and the experimental group was facilitated by a group of different professionals. The educational interventions from all five groups consisted of workshops, shadowing experiences, online case studies and web-based resources, case vignettes, formal classroom education, and seminars involving 20-30 minute interviews with patients. Findings concluded that the students' attitudes and perceptions towards interprofessional collaborative education were enhanced. However, the evidence for using IPE to teach communication and clinical skills is inconclusive and further research is imperative in order to determine whether the outcome accredited to IPE can be sustained over time.

The literature is very limited concerning research conducted in the acute care clinical setting or community setting. Mann, McFetridge-Durdle, Martin-Misener, Clovis, Rowe, Beanlands, and Sarria [12] discussed the development of an interprofessional education model. The aim of this model was to extend classroom-based interprofessional learning into experiential learning. The authors concluded that theoretical framework is critical to the development of IPE. However, to effectively develop sustainable models experiences must demonstrate improvements in patient care. Richardson et al. [13] conducted a qualitative study in the community setting with the aim to design, implement, and evaluate a training program for an interprofessional community scholar. During the IPE rotation, 7 physiotherapy and 8 occupational therapy students were placed at a clinical site where the students discussed community and collaborative practice health issues with community leaders. They also met bi-weekly with faculty and peers to discuss community health and interprofessional practice. Through focus groups and reflective journaling, the authors concluded that the students became aware of other team members' areas of expertise, what they bought to the team, the expertise of other health professions, and how teamwork operated. The authors also discussed how the project provided populations at risk for disability access services. However, improvement of patient outcomes were not measured [13].

A mixed methods study was conducted by Lachmann, Ponzer, Johansson, Karigreen and Fossum [14] to obtain an understanding of how interprofessional students comprehend the connection between the clinical experience and interprofessional collaboration. Fifteen students participated in a two week interprofessional clinical course. Perception of the experience data was collected several times a day utilizing the Contextual Activity Sampling System (CASS). All students were interviewed after completion of the clinical experience. Findings during the clinical experience included student concerns with regard to collaboration and teamwork. However, after the clinical experience, student reflections focused more on the benefits of the experience. Important conclusions drawn from this study include the indication that IPE students need facilitated support to reach the outcomes of the clinical experience [14].

3. CONCEPTUAL FRAMEWORK

The theoretical frameworks selected for this study were Rogers' Diffusion of Innovation [15] and Kotter's Eight-Step Process for Leading Change [16]. Kotter's Eight-Step Process blends the diffusion of innovation (DOI) theory (factors specific to adoption such as social influence and facilitating conditions) into concrete steps to facilitate and lead change. In addition, Kotter asserts the importance of creating an effective group to lead change initiatives [16]. Characteristics of the group can be tied to Roger's [15] adopter categories. Table 1 provides an overview of the theoretical models and how they connect to one another.

Table 1

Overview of Theoretical Models

Step 1: Establishing a Sense of Urgency (Kotter) Innovation-Development Process (Rogers)	Step 2: Creating the Guiding Coalition (Kotter) The Change Agent (Rogers)
Step 3: Developing a Vision Strategy (Kotter) Innovation-Decision Process (Rogers)	Step 4: Communicate the Change Vision (Kotter) Communication Channels (Rogers)
Step 5: Empowering for Action (Kotter) Innovativeness & Adopter Categories (Rogers)	Step 6: Generating Short-term Wins (Kotter) Perceived Attributes of Innovations (Rogers)
Step 7: Never Letting Up (Kotter) Diffusion Network (Rogers)	Step 8: Inc. a Culture of Change (Kotter) Innovation in Organizations (Rogers)

4. PROJECT OVERVIEW

This project is supported by funds from the Bureau of Health Professions (BHPr), Health Resources and Services Administration (HRSA), Department of Health and Human Services (DHHS) under UD7HP26043 Nurse Education, Practice, Quality and Retention- Interprofessional Collaborative Practice. The information provided in this article are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by the BHPr, HRSA, DHHS or the U.S. Government.

The following section discusses this pilot project in two phases. The first is the planning and design phase and the second is the implementation and refinement phase. Kotter's Process for Leading Change [16] is used as the overarching framework in phase two.

Phase I: Project Planning and Design

Assessing Project Sites: Through a needs assessment conducted during grant proposal development, the project team determined that the greatest local need existed in community-based settings. Once the project was funded, the team established with two local project sites, both with differing clients and needs. Because our project is located in a health professional shortage area and a medically underserved area, the number of sites needing health professionals was alarming. However, in order to conduct, refine, and establish best practices in delivering interprofessional health and wellness in community based settings, two project sites were selected for the pilot with anticipation for expansion in future project years.

The first was a homeless day shelter which provided the opportunity to work with indigent and military veteran populations. This day shelter serves as a one-stop center, offering services to the homeless and is available to any homeless person or family, including transients. Multiple agencies are on-site and available to provide immediate assistance and case management services that could end the homeless status of some individuals and families.

The second site was a convenient, subsidized housing community for eligible senior residents who have a myriad of medical and social healthcare needs. These include chronic conditions, health disparities, lower socioeconomic status, and educational and financial barriers. The community also serves as a population panel which will allow the project team to integrate population health into the curriculum.

During the fall semester, the homeless shelter was utilized and during the spring semester the senior housing apartment complex was utilized. Through constant evaluation and refinement, the summer semester included one day at each project site. It is the intention of the project team to expand offerings at these sites to two days a week. Additional long term goals include the expansion of project sites as we anticipate this program integrating every health professional student within our health sciences division.

Designing the Program: The main objective of this three-year project is to improve patient outcomes through the use of interprofessional health professional teams. What differs in our program design is the introduction of interprofessional experiences within clinical settings rather than educational settings. In addition, our program focused on community-based health and wellness services rather than services provided in a health service establishment such as a doctor's office or hospital. As a team, we understood that before student teams could work harmoniously, a basic level of competency was needed with regard to interprofessional practice. Therefore, the core competencies for interprofessional collaborative practice [1] were embedded into clinical activities, discussions, and project activities.

The project was designed to promote an environment where nurses, medical students, and physician assistant students could engage in clinical practice collectively and collaboratively. The clinical focus for the group was wellness and health promotion, not intervention. The underlying focus of the clinical experiences was interprofessional team building, collaborative problem solving, and care-coordination. These processes were accomplished within the group simultaneously with delivery of high quality health promotion and wellness services to diverse populations in the community. The primary clinical sites included a homeless center and senior housing facilities. In these settings, interprofessional teams of nurses, physicians, and physician assistant students worked together to solve clinical issues and improve patient outcomes using a quality improvement framework to focus collaborative discussions. The project was designed using the interprofessional core competencies identified by the Interprofessional Education Collaborative Expert Panel [1].

The project team envisioned for our pilot a two phase approach to integrating these competencies into clinical practice. Phase I, conducted during the fall semester of 2013, would focus on the education of interprofessional core competencies and utilize the Interprofessional Education Collaborative Report [1] and the MedEdPortal resources to develop learner understanding. In addition, students would have access to an asynchronous learning environment which would include resources specific to the clinical site selected for this phase. Clinical preceptors would ensure during Phase I that lower level core competencies were met and would establish interprofessional teams for Phase II. Phase II, conducted in the spring of 2014, would focus on higher-level core competencies, application of interprofessional health services delivery, and population based medicine. IPEC teams would have the opportunity to work directly with patients in community settings as well as focus on community-based service and research projects that would improve patient outcomes. Team members selected specific core competencies from each competency domain and connected them with relevant clinical practice objectives and activities for each phase of the interprofessional experiences.

Recruiting Student Participants: Faculty from each of the collaborating educational programs (Medicine, Nursing, and Allied Health Professions) were responsible for the dissemination of information and recruitment of students for the pilot. Pilot students were selected early, midway, and near the end of their program of study; however, they were teamed with other health professional students at the similar competency levels. For example, senior undergraduate students who had 200 clinical hours were partnered with first year medical and physician assistant students who had little to no patient contact. Most students volunteered for the experience and received no course credit during Fall, 2013. The faculty team revised the recruitment processes during Spring, 2014 and employed a

service learning model to allow students to gain course credit for attendance and completion of activities.

Phase II: Implementation and Refinement based on Kotter's Leading Change Process

Cultivating the Need for Change: Kotter's [16] first step is creating a sense of urgency for change. The need for health professions to work in effective teams has become a national conversation. The common interpretation is that in order to work collaboratively, health professions must be educated together so that they understand the roles and functions of each other and begin to build a trusting relationship. Although a national effort has been made to foster a sense of urgency in changing the culture of siloes in health care, there has been little advancement in changing current education and practice models. This message has been communicated not only through professional organizations but also within our own health science division. Leaders within the division have encouraged and supported interprofessional advancement in professional development and education, and afforded opportunities for conference and networking exposure among faculty. The timing of this grant also provided an immediate sense of urgency and motivated movement for the development of interprofessional experiences within the health science curriculum.

Establishment of Interprofessional Team: The second step in leading change is the creation of the guiding coalition [16]. Both the project team and advisory board were developed around Kotter's [16] four qualities of an effective guiding coalition, ensuring our team reflected position power, expertise, credibility, and leadership. Within each of the health professions' disciplines, we included administrators with a vested interest in the project ensuring that resources needed to achieve project goals could be accomplished without barriers or blocked progress.

Additionally, the team encompassed a broad range of expertise not limited to the health professions; including accreditation, curriculum design, educational and instructional technology experts. This provided a holistic approach to tackling project goals and created meaningful dialogue as the activities and progression of the project were designed. As identified within Rogers' [15] adopter categories, the project team established credibility by including early adopters who were respected among their peers and had the ability to influence adoption of others. Finally, each project member demonstrated proven leadership capabilities, particularly in redesigning curriculum and clinical experiences. Group descriptions for the working team and advisory board are provided within this section.

Working team. Just as Rogers' [15] identified the importance of ensuring innovators and early adopters are involved in the adoption process, it is equally as important to ensure your project team encompasses these characteristics. Failure to devise a sound team to plan, develop, and implement an institutional and cultural change, such as interprofessional clinical practice, will result in stagnation and may hinder change from spreading. The 9-member team comprised of representatives from the Allied Health (Physician Assistant program), Medicine, and Nursing Colleges, ensuring each profession had a vested interest in the project. It was crucial to ensure that each respective health science profession was represented and that members of the team were change agents. These individuals were responsible for taking the collective ideas of the team back to their respective professions' gatekeepers and opinion leaders. In addition, each team member also held a certain level of influence and/or administrative authority to ensure changes discussed could be implemented.

Advisory board. In addition to the project team, an advisory board was established which included additional members of the faculty from nursing, medicine, and physician assistant health professions, the Vice President for Health Sciences and key constituents in both the academy and community. This included leaders from the clinical sites, our Quality Enhancement Plan Director, USA Medical Center's Hospital Administrator, and the Director for the Center of Intergenerational Studies.

Professional Development and Establishment of Vision: Kotter's [16] third step is developing a change vision. We felt that this step coincided with professional development as it was through the development of competencies of faculty that the need for a common vision and goals was established. With the numerous interpretations and varying meanings for "interprofessional" education and practice, a need for a common vision and terminology among project faculty surfaced. The Interprofessional Education Collaborative [1] developed the core competencies for interprofessional collaborative practice which included operational definitions making it clear to delineate between various interprofessional activities. This report was utilized as the foundation for our project with the core competencies identified as our guiding competency domains.

In additional to each team member receiving a copy of the report, the project also provided professional development opportunities through an onsite consultant visit and national training delivered through the Interprofessional Education collaborative. During the consultant visit, the team was able to identify the need for a common vision and goals associated with the project. The vision developed by the team is as follows:

> "*We believe in the need to prepare health professionals to work as members of an interprofessional team to provide safe, comprehensive, patient-centered and community population oriented health care."*

The four main goal areas include faculty development, assessment, curriculum, and experiential community projects and clinical practice. The goal of the IPE/IPCP experiences is to:

> *"…increase exposure to interprofessional education and clinical practice environments for all health professionals. This transformation will focus on the F.A.C.E. of the next generation of health care delivery*."

Team members were broken into smaller teams to attend national training at the Interprofessional Education Collaborative. This training provided opportunities for team members to hone their interprofessional knowledge competencies, network with other higher education institutions

utilizing interprofessional education and clinical experience within their curriculum, and further develop the project's objectives with team one focusing on the clinical aspects of the project; team two focusing on the curricular components of the project. Project year two will include team three, our final team, which will be charged with refining current project objectives and initiatives.

Transparent Communication for Buy-in: Ensuring buy-in for the vision is a major step and is identified as step four in Kotter's leading change process [16]. Project team meetings were held every other month and administrators from each health profession were invited and encouraged to come. In addition, clinical experience faculty facilitators extended an open invitation to all health professions' faculty and administrators who were interested in observing the activities from the project. As word of mouth progressed, mainly from students involved in the project, other faculty and disciplines indicated an interest in participating in the project.

Inspiring Action: Structural barriers often times can deter progress and change. Kotter's [16] step five identifies the importance of empowering broad-based action. This is the step the project team struggled the most with during our pilot year. Although the broad message was communicated, and on the surface, faculty appeared to be motivated for change, there were many structural barriers that slowed our progression particularly in the first half of the year. Kotter identifies segmented resources and responsibilities as a major barrier to change and suggests the need for a realignment of incentives [16]. Through financial support provided by the project, a team of health science administrators were able to attend to the Interprofessional Education Collaborative conference.

During the two-day intensive sessions, administrators were able to dedicate time to discussing current barriers to program growth and interprofessional initiatives and work on solutions to overcoming these issues. As a result, the administrative team returned to campus and advocated for a Center of Interprofessional Studies for our health science division. Additionally, they have provided full support to the project and work closely with the project team to appropriate needed resources and support to foster program growth and sustainability.

Recognizing Accomplishments: Kotter's sixth step is generating short-term wins [16]. At the end of each semester, the project team evaluated pilot effectiveness and made revisions to improve the student experiences. This included soliciting feedback from team members, project faculty, and students. In addition, as a way to promote the accomplishments of the students and show appreciation for their involvement in the development and improvement of the project, the pilot students were given an Interprofessional Fellow Ceremony, recognizing these pioneer students as the founding members of the Interprofessional Fellows. This opportunity was also utilized to increase communication of the vision of our project. Outstanding students from each discipline were asked to speak about the core competencies learned as well as the learning activities and outcomes that were afforded through the interprofessional experiences. The positive impact from this event cannot be understated and became a major driver in the increased faculty and health professions' interest to be involved in future project efforts.

Continuing the Movement: As the year one and the pilot come to an end, Kotter asserts that an organization must keep moving forward and not let up on the momentum [16].

5. DISCUSSION

As a result of following the aforementioned steps, the project team has noticed a considerable amount of interest not only from the professions represented in the pilot but also in other health professions' disciplines including Physical Therapy, Occupational Therapy, Social Work, and Pharmacy. In addition, students who participated in the project have shared their experiences among their peers, increasing the interest in the program. The clients at each community based site have also indicated an interest in increasing the interprofessional health team onsite visits from once a week to twice a week. Due to the increased demand from students, existing and new health professions' disciplines, and community needs, the team is increasing in size and encompassing a larger scope.

The project team has also added a program evaluator to help assess not only the project impact for student learning but also to explore measures to determine if patient outcomes are being impacted. Based on descriptive data received from clients as well as preliminary pilot data, our team believes that the health promotion and wellness activities are increasing social connectedness, medication regime knowledge, health awareness, and weight management; and improving client challenges with chronic conditions ultimately leading to a better quality of life.

Recommendations for Practice: For those involved in the development of an interprofessional clinical learning experience, it is important to understand the need for administrative buy-in and faculty resources. While many administrators were supportive, many could not free up faculty loads to assist with clinical experiences. As a result, the project could not expand during the pilot year. Individual efforts can create some movement, however, faculty efforts on a larger scale are required in order to create and sustain a culture of change.

Flexibility was another major component in development and implementation of the pilot experiences. Administrators tend to have numerous time constraints, so coordinating meetings and activities can be challenging but accomplishable. In addition, the coordination of project activities across diverse curriculums can be difficult. Each health science discipline has its own accreditation standards and requirements for didactic and clinical experiences, which can make integrating interprofessional experiences problematic. During project planning, major compromises and creativity were needed to tailor a program that suited each respective profession.

Lastly, training for both faculty and students involved in the project is necessary. As we quickly realized during our project, many individuals have a different idea of what "interprofessional" education and practice comprise. Providing professional development opportunities to ensure faculty were proficient in interprofessional competencies helped unify our team. Training for students is also a necessary consideration when designing interprofessional experiences. During our first semester, we were unable to provide training for our students to familiarize them with the pilot project. The lack of training provided to students ended up being time consuming for faculty

as more time was spent preparing students on an individual basis rather than as a group. To address this challenge, an orientation was held the second semester of the pilot to establish expectations and familiarize students with interprofessional core competencies. The difference in preparation for each of these cohorts was apparent and indicated the need for student training prior to clinical experiences. Additionally, refinement of training has led to a more structured orientation and application of core competencies prior to the clinical experience.

Recommendations for future research: As evident from the literature, the impact of Interprofessional work on patient outcomes is lacking. Various institutions across the nation are working to address the lack of evidence based outcomes. Year two of our project has been redesigned to include biophysiologic measures, and instruments to measure patient satisfaction and social connectedness. Findings from data gathered will expand what is currently known about the impact of interprofessional practice on patient outcomes.

Interprofessional work in community-based settings is also a poorly established area of research. With health models and national initiatives prioritizing the need for community-based healthcare, it is apparent that our current health model is shifting. Therefore, moving interprofessional clinic experiences outside of the hospital setting and into the community is essential. This will also help develop best practices for interprofessional clinical experiences in these settings.

Research exploring whether didactic curriculum is providing opportunities for interprofessional core competency application is needed. Without the ability to "transfer" knowledge to the practice setting, students are not fully prepared to enter the profession and function as a part of an interprofessional team. Previous research on interprofessional initiatives has shown advancement in interprofessional education experiences but lacked the ability to fully integrate meaningful interprofessional clinical experiences, especially in the community-based setting.

Finally, studies to determine the effectiveness of interprofessional training on post-graduate practice is needed. Many studies have explored this within their program offerings, however, longitudinal studies exploring post-graduate effectiveness are lacking. This would help determine the impact the delivery of interprofessional care on the improvement of patient outcomes.

6. CONCLUSIONS

Overall, the pilot project included many accomplishments. Project outcomes included faculty expertise and leadership in interprofessional collaborative practice (IPCP) across the health science profession, increased collaboration and interprofessional clinical offerings for health science students, and exposure to the delivery of high quality, efficient, team-based care in community-based settings. This paper focused on on Kotter's eight-step process for leading change and provided insight into the elements needed to plan, design, implement, and refine an interprofessional clinical experience. These elements are necessary to ensure such experiences can be sustained and replicated for expansion. With the pilot phase completed, the project team will shift focus in year two to the impact of this experience on student learning and patient outcomes.

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