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Cover Page Footnote

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Exploring the impact of an interprofessional care protocol on the patient experience and outcomes for seniors with diabetes

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Abstract

Contemporary healthcare has placed intensified focus on the patient experience. Ultimately the patient experience is influenced by relationships with healthcare providers. In order to make a positive impact on patient outcomes and quality of care, the patient experience must be positive. Interprofessional collaboration is recognized as a key aspect of a culture that fosters patient-centered care and a positive patient experience. This quasi-experimental study explores the impact of interprofessional collaboration to develop a preventive services care protocol for seniors with diabetes. Patients were studied over six months using pre-test and post-test measures. Both quantitative data from clinical outcomes and qualitative data from the Diabetes Quality of Life Questionnaire are used to explore the impact of an interprofessional care protocol on the patient experience for seniors with diabetes. Results of the study, while not conclusive, suggest that significant improvements in blood glucose levels and aspects of quality of life, such as perceptions of being able to manage self care and reported feeling ill less often, were realized after receiving services that followed the interprofessional protocol. The study offers insights into the importance of interprofessional collaboration as a factor that can enhance the patient experience and presents a continuing education model to facilitate interprofessional collaboration within the healthcare workforce setting.

Keywords

Patient experience, interprofessional, collaboration, diabetes quality of life questionnaire, continuing professional education (cpe), workforce training, preventive care

Note

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Introduction

The link between patient experience and clinical outcomes has come to the forefront recently as a key consideration when planning for effective care delivery.¹ While many factors contribute to the patient experience, it is ultimately effective relationships between providers and their patients that directly impact the patient experience at the time of care delivery as well what happens once they leave the point of service. Effective relationships that enhance the patient experience are grounded in practice that considers the patient's needs from many perspectives. This requires effective interprofessional team collaboration.

There is a growing consensus that interprofessional (IP) team-based care offers the potential to improve quality of care. However, Varda et al.² emphasize that even though there is increased interest in collaborative practice in

healthcare delivery, there is still little empirical evidence within the literature to support and inform practice. With the emerging shift in focus to health promotion initiatives, research that explores the IP team impact on effective relationships between providers and patients are more important than ever.

To date, there has been insufficient focus on innovative approaches to improve community based services and quality of life for individuals living with chronic conditions³. The logic of preventive services is that early detection and/or ability to motivate behavior will promote better health.^{4,5} There are different ways to provide preventive services like screenings, vaccines, and assessments, which include a medical home model or clinic type settings. This study uses a quasi-experimental design to identify and analyze patient outcomes for seniors with diabetes using an IP team based protocol over a six-

month time frame. Patient outcomes are measured by quantitative clinical data and self-reported survey data using the Diabetes Quality of Life (DQOL) instrument, which addresses the patient experience from the patient's own perspective. Seniors with diabetes were selected for this study because diabetes in adults is the leading cause of blindness, foot and leg amputations (non-accident related), and kidney failure. Effective care delivery models, such as IP team collaboration, that enhance the patient experience in ways that motivate self-care changes that can lead to improved outcomes over time are an important aspect of healthcare delivery. According to Centers for Disease control (CDC),⁶ more than one in five people age sixty or older are living with diabetes. Effective management of chronic illnesses, including the use of preventive and education services to reduce the incidence of preventable hospital admissions, is one of the benefits that have been associated with interprofessional (IP) care collaboration.^{7,8} Innovation in care delivery models includes a foundation in both workforce training and facilitating change that is grounded in a culture of patient focused interprofessional collaboration..

The improvement of the patient experience, including clinical outcomes and quality of patient care, is the desired end result of creating an interprofessional team-based, collaborative approach to healthcare.^{9, 10} The Beryl Institute defines the patient experience as “the sum of all interactions, shaped by an organization’s culture, that influence patient perceptions, across the continuum of care.”¹¹ Interprofessional collaboration results in a patient-centered approach to care and an enhanced patient experience that ensures a more holistic perspective. An IP approach to care delivery ensures that a patient’s needs are considered from many perspectives and disciplines, all within the focus of patient-centered care. Many practitioners are surprised that they are exposed to aspects of patient care that they would not normally have considered when they collaborate with practitioners from other professions. In May 2011, an interprofessional panel representing the professions of allopathic medicine (AAMC), pharmacy (ACCP), nursing (AANA), osteopathic medicine (AACOM), and dentistry (ADEA) established four domains for interprofessional competencies designed to guide the educational process for healthcare professionals: 1) Values/Ethics; 2) Roles/Responsibilities; 3) Interprofessional Communication; 4) Teams/teamwork.¹² However, significant gaps are evident between current needs for enhanced interprofessional collaboration and what is in practice in primary and preventive services.¹³

There are powerful influences of professional enculturation and limited understanding of approaches to continuing professional education (CPE) that perpetuate the gaps between the need for change and actual change in practice.¹⁴ Creating a cultural change within the context of

care delivery requires intentional processes to facilitate a shift to truly interprofessional practice. IP collaboration must include interprofessional education, practice and interprofessional interventions.¹⁵ The Institute of Medicine (IOM) Committee on Planning a Continuing Health Care Professional Education Institute just completed an in depth study of continuing education for the health professions that concluded team-based healthcare delivery is necessary and that effective continuing education for healthcare professionals will be grounded in ways to engage practitioners in authentic work that has patient care and population health as its focus.¹⁶ Bringing an interprofessional focus to the development of innovative care delivery models requires collaboration among the health professions to increase learning with, from and about each other¹⁷ as well as incorporation of a patient-centered perspective.

Continuing professional education research emphasizes that educating working professionals must use authentic projects that have relevance in practice. To date, there is very limited research addressing knowledge translation or continuing professional education within the interprofessional context.¹⁸ This study examines the impact of a care protocol developed by an interprofessional (IP) team as part of a formalized continuing professional education (CPE) workshop and facilitated team process. The impact is measured by both self-reported quality of life indicators and clinical outcomes.

Aim of Research

The aim of this study was to examine the impact of an IP care model on the patient experience as measured by patient outcomes for a population of seniors with diabetes. For this study, a team of six practitioners representing nursing, physical therapy, podiatry, physician assistant, pharmacy, and a registered dietician collaborated within the context of a half day work shop and follow up interprofessional meetings to develop a specific care protocol for use in a preventive care setting. The protocol was designed to focus on preventive services that could be provided by any practitioner in a preventive care setting—typically a nurse or physician assistant. This study explored the impact of how the use of this protocol at monthly visits impacted the patients’ health status and their pre and post perceptions of their quality of life. The study was conducted within the context of a natural experiment, and changes in clinical outcomes were examined from an evidence-based perspective.

Methods

Using a quasi-experimental design, this research project compared differences between pre-test and post-test patient outcomes. Comparison of differences was based

on clinical indicators obtained directly from clinical assessment data, economic indicators and patient perceptions between standard care (baseline) and the interprofessional (IP) care model (intervention). The IP protocol visits were provided at a mobile care unit or outpatient clinic, both of which provide preventive services. Data collection from this group occurred at monthly visits over a six-month interval. Human subjects IRB approval was obtained and the IRB protocol was followed to obtain patient consent. Subject recruitment was completed at four senior centers with mobile care unit services and an outpatient community based clinic. The interprofessional care protocol developed by the interprofessional team of practitioners was followed for services that were delivered at these sites.

Recruitment Process

The target population for this study were senior clients (age 55 or older) with a diagnosis of diabetes. Advance announcements of the study were communicated at community senior centers and the outpatient clinic using posters and flyers, community newspapers and other community locations. All subjects provided consent to the study including monthly visits for six months. The recruitment process was as follows:

1. Invitation to participate in the study was promoted through various media communication strategies in each of the four target communities where the senior centers are located.
2. Letter from Principal Investigator introducing the research project and expected time commitment was shared with potential subjects at the senior center locations.
3. Signed consent was obtained.
4. A de-identifying coding process was used to ensure confidentiality of all subject data.
5. A general questionnaire was used to obtain demographic information such as age, gender, etc.

Research Questions

1. Are there differences in patients' pre-test and post-test clinical metrics based on care delivered by an interprofessional care protocol for seniors with diabetes?
2. Are there differences in-patient's pre-test and post-test humanistic outcomes based on care provided by an interprofessional care protocol for seniors with diabetes?

The Interprofessional (IP) Care Protocol (Intervention)

The care protocol was developed by the IP team during a CPE workshop and facilitated team meetings. It was used as the guide by nurses or physicians assistants who provided care at the visits. Elements of the IP care protocol included visual cues such as posters on the exam room walls that illustrate the body systems impacted by

diabetes, and a folder with information, worksheets and tools developed by the IP team on aspects of engaging family members for support, diet, exercise, medication management, and foot care.

Patient Measures

Clinical, economic and humanistic outcomes were examined for this study. Appropriate indicators were developed to measure those outcomes. Data was collected from patients who received services from the mobile preventive care program at four Senior Centers and one ambulatory clinic. The DQOL Brief Clinical Inventory was used to collect self-reported quality of life data. Occurrence of ER or hospital admissions and adherence with referral appointments were tracked by survey questionnaire data collected by the researchers at each monthly visit. Clinical indicators were measured by direct examination and assessment by nurse or physician assistant providers on the mobile care units or in the clinic. Clinical indicators included direct assessment of blood glucose, BP, BMI and foot examination with photographs, and self-reported medication compliance. Economic indicators will include self-reported occurrence of admissions to ER or hospital and adherence to referral appointments. The DQOL will measure the humanistic outcomes.

Dependent variables

1. Diabetic Quality of Life (DQOL) Brief Scores
2. Adherence to referral appointments as scheduled
3. Blood glucose levels
4. Blood pressure (BP)
5. Body mass Index (BMI)
6. Reported admissions to Emergency Room (ER)/Hospital since last visit
7. Foot examination results

The researchers collected data from the medical record and also by brief interviews with the patients regarding their compliance with medications and their overall health between visits.

Independent variables

1. Age
2. Gender

Diabetic Quality of Life (DQOL) Brief Survey

The DQOL was selected as an ideal instrument to examine the patient's direct experience regarding how well they are managing their diabetes and how they are feeling generally. The DQOL questionnaire originally was used as a 60-item instrument. It has since been adapted to a 15 item self-reported measure of perceived impact of diabetes on quality of life as an alternative option. The 15-item instrument was found to provide a total health related quality of life score that predicts self-reported satisfaction with control of diabetes, care behaviors as effectively as the full 60-item instrument. (Burroughs, et al., 2004).¹⁹

Watkins & Connell (2004)²⁰ identified concerns about the use of longer instruments with some populations such as older adults. Since the 15-item instrument required only about ten minutes to complete, it was selected as a more practical tool for this study.

Limitations of the Study

One of the limitations of the study was the small sample size and study mortality (i.e. non-completion of required six monthly visits) issues with the patient population. Mortality issues are common with longitudinal studies like this one, and the study is intended to be exploratory in nature. The lack of a control group would be another limitation for this study, and therefore causation cannot be ascertained. The use of a control group was not feasible due to logistics and limited resources available. Further, withholding services that are anticipated to be beneficial in order to have a control group presents ethical concerns for this type of research. Therefore, the one group pre-test post-test design provides a measure of change but does not provide conclusive results about its cause. However, since every subject of the study had been regularly seen and treated by a primary care physician at the time of initiating their participation in the study, this provided the opportunity to consider the pre-test data as baseline for standard care.

Ultimately, any research can be rated along a continuum moving from weakest to strongest design. This study uses both qualitative and quantitative measures, and it includes the use of a highly relevant intervention, which are both elements that strengthen research design.¹⁹ A truly

randomized study with a control group was not feasible for an initial study, and the use of a quasi-experimental design was chosen as the best approach. Abramson and Abramson's extensive work with research methods in community medicine summarize this in their quote that follows:

“Although quasi experiments are sometimes given the appellation of “pseudo experiment” they are often worth doing when a true experiment is not feasible.”²⁰

Results/Analysis

Tables 1 and 2 present the demographics of the patient population. There was fairly equal representation for both genders.

Table 3 presents clinical outcomes that allow for comparison and any trends observed from the baseline on Visit 1 and the end of the study at Visit 6. Although there were few areas of significant changes in clinical outcomes, there was a significant positive trend in the glucose level management that indicated a reduction in fasting glucose levels by 17 points. Based on this initial positive trend, it is possible that further improvements would have resulted if the study had extended over a longer period of time.

Table 4 presents the paired t test results for the DQOL survey that was administered at Visit 1 as the pre-test and at Visit 6 as the post-test. The results indicate that three factors significantly improved from Visit 1 to Visit 6 over the six months of the study.

Table 1. Subject Age

	N	Minimum	Maximum	Mean	Std. Deviation
Age	27	55.00	86.00	69.9259	10.55362

Table 2. Subject Gender

Gender	Frequency
Male	13
Female	12

Table 3. Patient Clinical Outcomes

Patient Characteristic	Visit 1	Visit 6
Weight	198.85	204.75
Body Mass Index (BMI)	27.14	29.08
Blood Pressure Systolic	130.62	130.66
Blood Pressure Diastolic	72.77	72.33
Glucose Level	156.95	139.25
Medication Compliance	1.81	1.83

Table 4. Quality of Life: Differences in Scores between Pre-test (Visit 1) and Post-test (Visit 6)

DQOL Survey Item Questions		Mean	Significance (p)
Item 1	How satisfied are you with your current diabetes treatment?	1.50000	.006
Item 2	How satisfied are you with the amount of time it takes to manage your diabetes?	-.90909	.043
Item 3	How often do you find that you eat something you shouldn't rather than tell someone that you have diabetes?	-.50000	.213
Item 4	How often do you worry about whether you will miss work?	.00000	1.000
Item 5	How satisfied are you with the time it takes to determine your sugar level?	-.54545	.082
Item 6	How satisfied are you with the time you spend exercising?	-.18182	.167
Item 7	How often do you have a bad night's sleep because of diabetes?	-.09091	.724
Item 8	How satisfied are you with your sex life?	-.90000	.068
Item 9	How often do you feel diabetes limits your career?	.72727	.104
Item 10	How often do you have pain because of the treatment for your diabetes?	.90909	.085
Item 11	How satisfied are you with the burden your diabetes is placing on your family?	-.45455	.211
Item 12	How often do you feel physically ill?	-.54545	.025
Item 13	How often do you worry about whether you will pass out?	-.18182	.553
Item 14	How satisfied are you with time spent getting checkups for your diabetes?	.00000	1.000
Item 15	How satisfied are you with your knowledge about your diabetes?	.00000	1.000

Source: DQOL, Brief Form (Bourroughs, T., et al. 2004).

First, subjects reported a significant improvement in their level of satisfaction with their current diabetes treatment. Second, subjects reported significant improvement related to the amount of time required for them to manage their diabetes. Third, there was a significant decrease in the frequency of times subjects felt physically ill as a result of their diabetes. These three significant findings from the DQOL are consistent with what would be expected as it relates to the improved glucose level readings reported in Table 3. These findings further support the idea that improved glucose levels result in a perception of increased satisfaction and a “feel good” attitude about themselves. It should be noted that analysis of data related to visits to the ER and hospital admissions were not included in the final result due to many confounding variables related to the data.

The results of the study provide evidence of trends that are indicators that interprofessional (IP) care does result in improvements in the overall patient experience and

positive clinical outcomes. Interestingly, all of the subjects in the study were under the care of a physician for their diabetes management. It appears that the IP care protocol addressed areas where patients needed more support than what they had been receiving from their routine medical visits.

Discussion

The aim of this study was to examine the impact of an interprofessional (IP) care model on patient outcomes for a population of seniors with diabetes. Even though all of the subjects in this study were under the continuous care of a physician, the services provided in the study under the IP protocol were supplemental and addressed aspects of care that improved the overall patient experience. The impact of the IP care model developed for this study indicates positive trends in several areas that are significant in terms of how patients experience their general health status and management of their diabetes. This includes

significant positive trends for how well prepared they felt to manage their diabetes which is consistent with what is expected from a positive patient experience. When patients perceive themselves to be well prepared to manage their chronic conditions, such as diabetes, this improves the patient's overall experience with managing their care and the support they are receiving from care providers. Subjects reported significantly improved perceptions in how well they were managing their diabetes care and the amount of time required to take care of themselves. Further, there was a significant reduction in the amount of times subjects felt physically ill due to their diabetes. These positive trends suggest that there are important benefits that can be achieved from the development and implementation of a truly interprofessional care protocol. The development, and use of, an IP care protocol also offers the opportunity for primary care providers to address a broader range of support to their patients by following guides developed from experts in a variety of disciplines outside of their own. For example, the IP team that participated in this study by completing the CPE program and developing of the protocol commented in their debriefing sessions that they were truly surprised by aspects of providing care for patients with diabetes that they had not considered prior to the IP collaboration process.

For future studies, the authors feel that a longer period of study extending over eighteen to twenty-four months would provide a longitudinal assessment and also provide sufficient time to find significant differences from first to last visit. The results of this study suggest that IP collaboration has a positive impact on the patient experiences. This study can serve as a framework to advance the work in creating a culture that focuses on the patient experience using IP collaboration as a foundation. Through workforce training and continuing professional education, the gap between current practice and the ideal use of interprofessional collaboration can be narrowed. Narrowing this gap will facilitate the development of an IP culture along with the benefits of enhancing the patient experience, and outcomes will be sustainable in the future.

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