Doctor of Nursing Practice Projects   College of Nursing

2024

Increasing Rates of Secondary Referral Services in the Outpatient Setting for Patients with Uncontrolled Diabetes Mellitus

Steven Barrett

Increasing Rates of Secondary Referral Services in the Outpatient

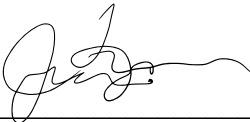**Setting for Patients with Uncontrolled Diabetes Mellitus**

Steven Barrett, BS, BSN, RN

A doctoral project submitted in partial fulfillment

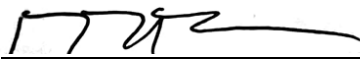**of the requirements for the degree of**

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Abstract

Diabetes incidence has increased in the United States since 1994 and remains amongst the top ten chronic diseases in the United States. Roughly thirty-four million Americans have diabetes and nearly $97 billion is spent annually on hospital admissions as a direct result of preventable diabetic health complications. Diabetes is often coined as a "silent illness" since 46.5% of affected individuals are unaware of their diagnosis. Primary care providers are at the forefront of diabetes management. In addition to oral medications and insulin administration, lifestyle changes and diabetic education remain the cornerstone of effective diabetes management. Evidence shows secondary referral services including clinical pharmacists, behavioral health counselors, and nutritionists can provide therapeutic response for patients with both controlled and uncontrolled diabetic. The purpose of this project is to: (a) assess barriers and facilitators resulting in outpatient secondary referrals for uncontrolled diabetes, (b) determine provider baseline knowledge and confidence in utilizing secondary referral services, and (c) determine the effectiveness of a provider educational tool by way of pre- and post- educational presentation secondary referral rates, with the goal of increasing secondary referrals for patients with uncontrolled diabetes. The results of this quality improvement project indicated that a 15-minute pre-recorded educational presentation increased provider knowledge and identified barriers to secondary referrals for patients with uncontrolled diabetes. Implementation of provider education suggests increased utilization of secondary referral services and positive diabetic health outcomes.

Keywords: diabetes, diabetes epidemic, secondary referral services, clinical pharmacists, behavioral health counselors, nutritionists, HbA1c, barriers and facilitators, diabetes management, health outcomes.

Introduction

Diabetes in the United States has remained a top ten leading chronic disease since declared an epidemic in 1994 (Williams, 2023). Diabetes prevalence continues to be on the rise in the United States, with an estimated 37.1 million Americans being diagnosed as of 2019 (Centers for Disease Control and Prevention, 2022). An estimated 8.5 million adults are considered undiagnosed or meet criteria for diabetes (Centers for Disease Control and Prevention, 2022). In 2019, nearly 1.4 million new cases were diagnosed and reported to the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, 2022). It is critical that increased initiatives are implemented to reduce negative health consequences, decrease healthcare costs, and improve patients' quality of life.

Diabetes is currently ranked eighth in the United States as a cause of death and accounted for 7.86 million hospital admissions in 2020 (Centers for Disease Control and Prevention, 2022). Roughly thirty-four million Americans have diabetes and nearly $97 billion per year is spent on hospital admissions as a direct result of preventable diabetic health complications (Freedman et al., 2019). Direct estimated costs of diagnosed diabetes increased from $227 billion in 2012 to $307 billion in 2022 (Centers for Disease Control and Prevention, 2022). Diabetes has significant short and long-term health implications for affected individuals, such as major cardiovascular disease, stroke, hyperglycemic crisis, hypoglycemia, and lower-extremity amputation to name a few. Research suggests that better utilization of secondary referral services correlates to improved glycemic control (Orabone et al., 2022). People with uncontrolled diabetes who seek secondary referral services have better health outcomes (Henry et al., 2013). Therefore, it is pertinent outpatient providers submit secondary referrals for all patients with uncontrolled diabetes to improve health outcomes. This quality improvement project seeks to: (a)

assess barriers and facilitators resulting in outpatient secondary referrals for uncontrolled diabetes, (b) determine provider baseline knowledge and confidence in utilizing secondary referral services, and (c) determine the effectiveness of a provider educational tool with the goal of increasing secondary referrals for patients with uncontrolled diabetes.

Literature Review

Chronic Disease and Prevalence

Diabetes has been on the rise since 1994 and remains a leading chronic illness in the United States to this day (Williams, 2023). According to the World Health Organization (WHO) in 2014, diabetes affected 422 million individuals worldwide (Da Silva et al., 2018). In 2012, diabetes accounted for nearly 1.5 million deaths worldwide as a result of chronic and acute complications (Da Silva et al., 2018). Diabetes is responsible for an estimated 11.6% of the world's healthcare costs in 2010 (Da Silva et al., 2018).

Diabetes is often coined as a "silent illness" as 46.5% of affected individuals are unaware of their diagnosis (Da Silva et al., 2018). Management of the disease requires active patient engagement since lifestyle changes are a cornerstone to managing symptoms and curb disease progression. Lifelong management of the disease is necessary for positive health outcomes. With proper diabetes management, by way of lifestyle changes (diet and exercise) and medication management, individuals living with diabetes can have a normal and fulfilling life with little to no health complications (Da Silva et al., 2018).

Diagnosis Criteria

The American Diabetes Association defines diabetes as "a condition where the body's blood glucose (blood sugar) levels are higher than normal (hyperglycemia) resulting from the

body's inability to use or store blood glucose for energy" (Diabetes Related Common Terms, n.d.). Diabetes is caused by several etiologies and characterized by a degenerative metabolic dysfunction, as a result from changes in production, secretion, and the ability of insulin to function as intended (Da Silva et al., 2018).

The diagnosing criteria for type 2 diabetes includes the following elevated laboratory results on two separate occasions: (a) a fasting plasma glucose of 126 mg/dL or higher, (b) a hemoglobin A1c (HbA1c) of 6.5% or higher, or (c) a 2-hour oral glucose tolerance test (OGTT) of 200 mg/dL or higher (ElSayed et al., 2022). HbA1c measures the average blood glucose in a person's blood over the course of the past three months and is the most commonly utilized laboratory testing for both diagnosing and managing diabetes in the outpatient primary care setting (ElSayed et al., 2022; Diabetes Related Common Terms, n.d.).

Uncontrolled Diabetes

Uncontrolled diabetes is defined as HbA1c of greater than 7% in an individual diagnosed and treated for diabetes (Liu et al., 2020). Individual healthcare organizations working under this definition often create internal metrics for the sake of data capture and reimbursement purposes. For the purpose of this quality improvement project, the clinical sites definition of uncontrolled diabetes is defined as any patient with an HbA1c greater than 8%. Uncontrolled diabetes directly impacts both patient health outcomes and healthcare spending in the United States and worldwide. When individuals are considered to have "uncontrolled" diabetes, they are at higher risk of developing cardiovascular disease, stroke, chronic kidney disease that can result in an increase of negative health outcomes, decrease in quality of life, and potentially death if left untreated (Da Silva et al., 2018).

Barriers to Managing Diabetes

Health literacy and access to care plays a factor in the management of diabetes (Kugbey et al., 2017). Early detection and patient education play a pivotal role in further preventing poor outcomes in these individuals. A multi-level approach to addressing this illness is recommended by population health professionals (Freedman et al., 2019). The chronicity of diabetes and slow disease progression often result in patients going undiagnosed and worsening disease states. Multiple ethical and cultural considerations result in barriers of effective diabetes management as a result of religious beliefs, dietary restrictions, and/or lifestyle choices (Rebolledo & Arellano, 2016).

Secondary Referrals Services

Current literature related to the utilization of secondary referral services shows that referrals to clinical pharmacist educator role significantly decreased HgA1c from 9.12% at baseline to 8.13%. (Henry et al., 2013). Orabone et al. (2022), determined pharmacist-managed diabetes program efficacy, assessed by the change in number of all-cause ED visits and hospitalizations for 12 months before and 12 months after the study. The results showed both ED visits and hospitalizations decreased significantly after entry into the pharmacist-collaborative care group. Behavioral health counseling demonstrated positive outcomes in emotional, behavioral, and psychosocial aspects of health, as well as improved HgA1c values (Damazo, 2021). Persistent gaps in diabetes care are common even amongst insured patients (Gregg et al., 2010). Research suggests a lack of consistency in submitting secondary referrals by outpatient providers for those patients that would benefit most, resulting in gaps in providing effective diabetes care (Henry et al., 2013; Damazo, 2021).

Purpose

Improving health outcomes in individuals with diabetes through the use of evidence-based practice at the primary care level is critical to improving disease management and progression (LoBiondo-Wood & Haber, 2017). The purpose of this project is to: (a) assess barriers and facilitators resulting in outpatient secondary referrals for patients with uncontrolled diabetic patients, (b) determine provider baseline knowledge and confidence in utilizing secondary referral services, and (c) determine the effectiveness of a provider educational tool by way of pre- and post- educational presentation secondary referral rates, with the goal of increasing secondary referrals for patients with uncontrolled diabetes. Current research suggests that the utilization of secondary referral services (i.e., clinical pharmacists, nutritionists, and behavioral health counselors) in an outpatient setting for uncontrolled diabetic patients has a positive impact on HbA1c values and overall diabetic management (Henry et al., 2013). This quality improvement project was conducted at a mid-sized healthcare organization with more than a dozen health centers and roughly four hundred staff employed across the region. The secondary referrals are implemented within the parent healthcare organization. Few outside referrals are required.

Theoretical Framework

The Health Belief Model, Jones et al. (2014), is defined as "six constructs that predict health behavior: risk susceptibility, risk severity, benefits to action, barriers to action, self-efficacy, and cues to action" (Becker, 1974; Champion & Skinner, 2008; Rosenstock, 1974). Jones continues, "people will take action to prevent illness if they regard themselves as susceptible to a condition (perceived susceptibility), if they believe it would have potentially serious consequences (perceived severity), if they believe that a particular course of action

available to them would reduce the susceptibility or severity or lead to other positive outcomes (perceived benefits), and if they perceive few negative attributes related to the health action (perceived barriers)"

The Health Belief Model supports the increase in secondary referral rates in primary care settings by focusing on provider beliefs, benefits to action, risk susceptibility of not receiving additional support, and skills for patients to obtain self-efficacy. The focus of secondary referrals is to further educate and engage patients, increase awareness of diabetic complications, and improve collaboration with healthcare providers to set/achieve goals to better manage disease progression. The Health Belief Model and secondary referrals require active partnership between patient and primary care provider. Primary care providers are responsible for monitoring disease progression and accurately identifying patients best suited for secondary referral submission. Secondary referral services (i.e., Clinical Pharmacist, Nutritionist, Behavioral Health Counselor, and Registered Nurse Care Coordinator) assist with educating, coaching, and treating patients' condition. Patients need to be active participants in their diabetic care for optimum results. The Health Belief Model encompasses the goal of this quality improvement project, keeping the research scope limited to positive patient health outcomes and identifying barriers/facilitators in the secondary referral process.

Methodology

Design

This quality improvement project consisted of primarily quantitative measures. The purpose of this project was to: (a) assess barriers and facilitators resulting in outpatient secondary referrals for patients with uncontrolled diabetic patients, (b) determine provider baseline

knowledge and confidence in utilizing secondary referral services, and (c) determine the effectiveness of a provider educational tool by way of pre- and post- educational presentation secondary referral rates, with the goal of increasing secondary referrals for patients with uncontrolled diabetes. The rationale to conduct a quality improvement project was based on the organizations interest in better utilizing internal secondary referral services for uncontrolled diabetes. The ethics of this project, as stated by the Seattle University Institutional Review Board (IRB), was determined to be exempt in accordance with federal regulation criteria.

Setting

The setting for this quality improvement project was an outpatient federally qualified health center (FQHC) in rural Oregon. This organization employs primary care providers and secondary referral services (i.e., clinical pharmacists, nutritionists, behavioral health consultants, registered nurse care coordinators). They also employ Spanish speaking interpreters to conduct in-office and phone visit/consultations and there was access to interpreters for other languages as needed. To further address barriers, bilingual providers, registered nurses (RN's), medical assistants (MA's), community health workers, and front desk staff are part of the health care team.

Recruitment of Participants

Participants were the primary care providers at the fourteen clinics. Inclusion criteria for participants consisted of English-speaking medical doctors, family nurse practitioners, and physician assistants. Exclusion criteria consisted of non-prescribing healthcare personnel (i.e., RN's, MA's). Recruitment of participants was obtained through convenience sampling. Selected

participants were sent an invitation via internal email. Informed consent was obtained through the first question of the phone interview (see Appendix B).

Intervention

A pre- education provider phone interview was conducted to assess current practice, secondary referral services knowledge, attitudes, and barriers/facilitators towards secondary referral submission. After the phone interviews were conducted, participants received an email containing a link to a 15-minute pre-recorded educational presentation which included the following topics: secondary referral services efficacy and referral timing, health risks associated with mismanagement, screening tools, patient education, and information regarding the financial burden and prevalence of diabetes in the United States.

The presentation began with a brief overview on the disease prevalence of diabetes in the United States and the financial healthcare burden resulting from frequent emergency room visits related to negative diabetic health outcomes (Freedman et al., 2019). The educational presentation highlighted the shared perceived barriers among participants and the potential impact that could occur if said barriers were removed. Information was provided regarding the internal referral process within the organization and where to direct specific questions when and if they arise. The presentation also provided statistical data regarding potential decreases in HbA1c and negative health outcomes when patients with uncontrolled diabetes receive secondary referrals for further management (Henry et al., 2013).

Data Collection

Data retrieval was obtained through the site's data analytics team. Previous secondary referral rates for each participant were collected. Data was separated by provider-patient panel to

better assess the efficacy of each individual participant's diabetic management rates and the rates at which secondary referrals were submitted. A participant phone interview was conducted prior to the education presentation to assess current practice, secondary referral services knowledge, attitudes, and barriers/facilitators. A follow-up data retrieval two-months post-education was conducted to assess the educational presentations influence on secondary referral rates for uncontrolled diabetes.

Measures/ Tools/ Instruments

Quantitative data was obtained through unpaired T-test results of secondary referral rates. Unpaired T-tests allow for the comparison of two separate variables to distinguish if there is a correlation (Johnston et al., 2023). The two variables were the secondary referral rates pre-educational presentation, and secondary referral rates post-educational presentation for uncontrolled diabetes. Qualitative data consisted of a semi-structured interview using open-ended questions to prompt answering questions thoroughly and honestly (McKenzie et al., 2009). An interview guide was utilized throughout each participant phone interview (Appendix B).

Data Analysis Plan

The data analysis was conducted using unpaired T-tests on secondary referral rates pre-and-post participant phone interviews and pre-recorded educational presentation (two-months later) for comparison purposes. Secondary referral rates were graphed, looking for trends in referral rates on a provider-to-provider basis. No coding software was utilized/purchased for this quality improvement project due to the scale of the project and timeline constraints. Directed content analysis was utilized to validate or improve the current utilization of secondary referral services for diabetic management (Bonnel & Smith, 2021).

Results

In the three-month period prior to the educational presentation initiation, approximately 35.5% of patients with uncontrolled diabetes (HbA1c > 8%) successfully received a secondary referral.

Table 1

Open-Ended Question

What is your current practice in the management of uncontrolled diabetes?	# of Mentions
0 - 5 patients/week	0
5 - 10 patients/week	4

Table 2

Open-Ended Question

How effective do you feel you are at managing/treating uncontrolled diabetes?	# of Mentions
Room for improvement	1
At goal/Effective	3

Table 3

Open-Ended Question

How often do you currently refer to secondary referral services (i.e., clinical pharmacist, nutritionist, RN care coordinator, behavioral health counselor)?	# of Mentions
0 - 25% of the time	1
25 - 50% of the time	2
50 - 75% of the time	0
75 - 100% of the time	1

Table 4

Open-Ended Question

Do you believe you have room to improve in your secondary referral rates?	# of Mentions
Room for improvement	3
No room for improvement	1

Table 5

Open-Ended Question

How well do you understand the role that secondary referral services play in diabetic management?	# of Mentions
Adequate	2
Very Well	2

Table 6

Open-Ended Question

How comfortable are you at explaining the services provided by secondary referral team members?	# of Mentions
Not comfortable	0
Comfortable	3
Very Comfortable	1

Table 7

Open-Ended Question

What perceived barriers currently impact the submission of secondary referrals for uncontrolled diabetes, if any?	# of Mentions
No perceived barriers	0
Provider barriers	0
Patient barriers	4

Table 8

Open-Ended Question

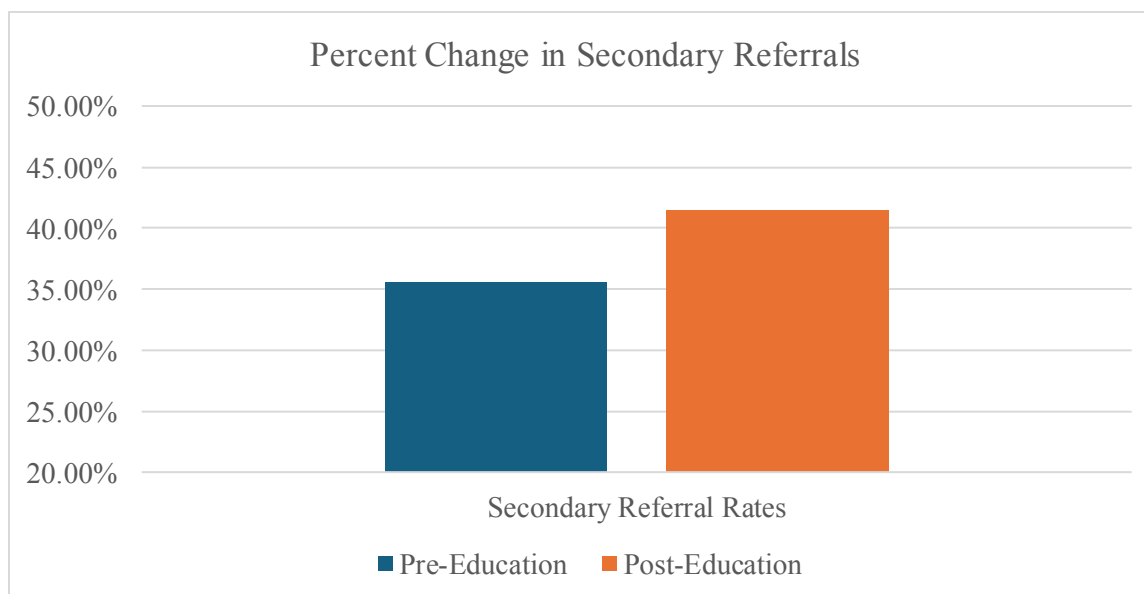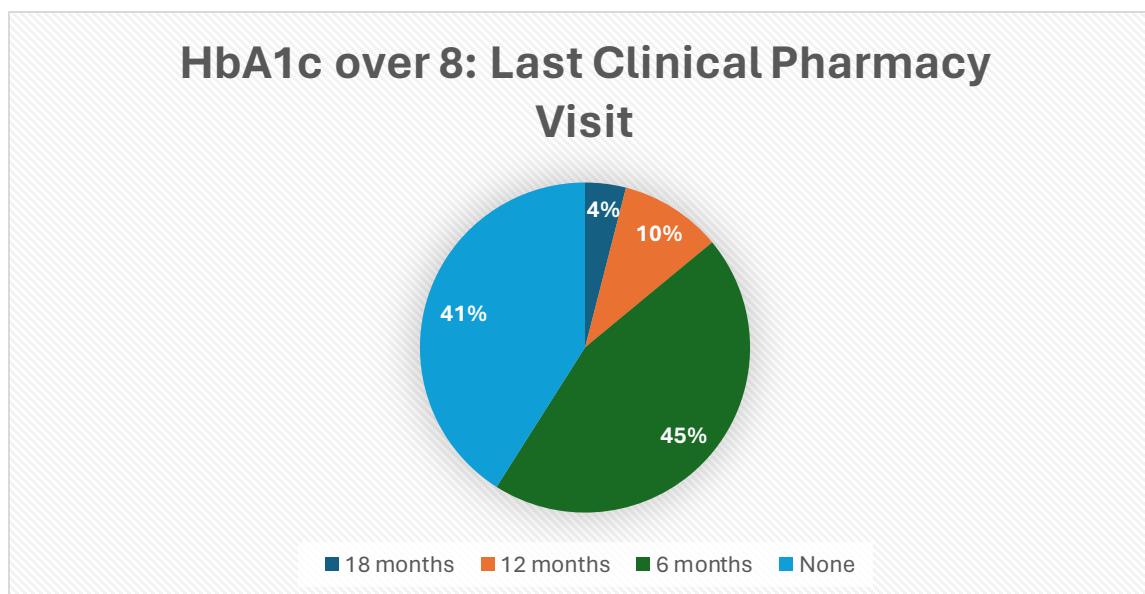| What benefits do you anticipate seeing if secondary referral services were better utilized for the management of uncontrolled diabetes?	# of Mentions
No benefit	0
Better glycemic control	4
Improved patient outcomes	3
Increased patient compliance	2

Figure 1.

Average Percent Increase from Pre- to Post-

Figure 2.

Combined Clinic Secondary Referral Data (Pre-Education Data)

HbA1c over 8: Last Clinical Pharmacy Visit

18 months 12 months 6 months None
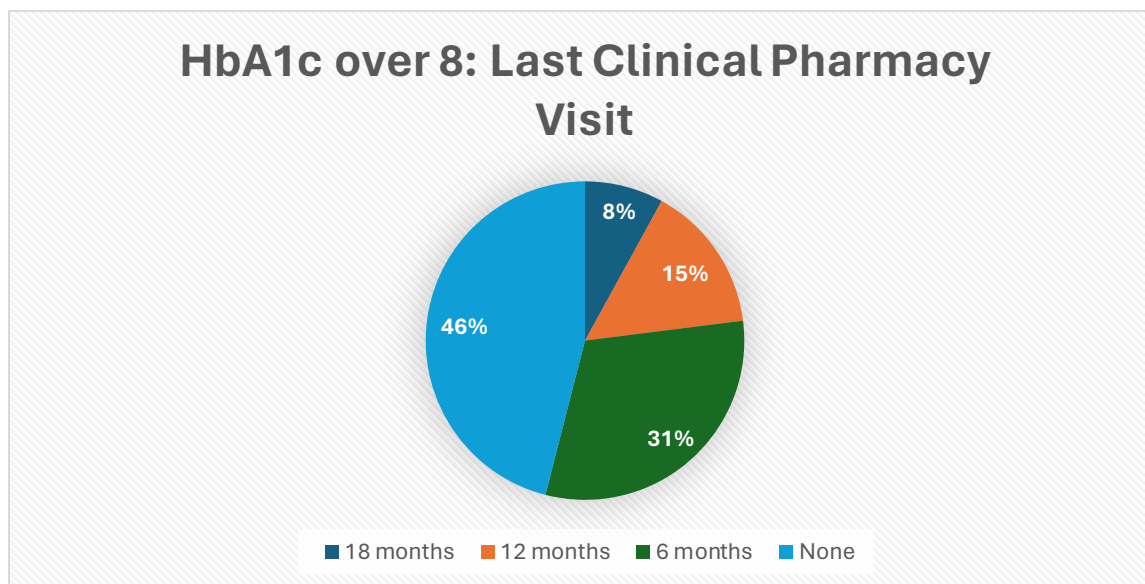
Figure 3.

Combined Clinic Secondary Referral Data (Post-Education Data)

HbA1c over 8: Last Clinical Pharmacy Visit

18 months 12 months 6 months None

Discussion

The purpose of this quality improvement project was to: (a) assess barriers and facilitators resulting in outpatient secondary referrals for uncontrolled diabetes, (b) determine provider baseline knowledge and confidence in utilizing secondary referral services, and (c) determine the effectiveness of a provider educational tool by way of pre- and post- educational presentation secondary referral rates, with the goal of increasing secondary referrals for patients with uncontrolled diabetes. The goal was to tailor an educational presentation to align with the perceived gaps reported by referring primary care providers to increase secondary referral rates as clinical research supports this care model (McKenzie et al., 2009). The data collected resulted in the educational presentation increasing secondary referral rates for patients with uncontrolled diabetes. This section summarizes the findings of this quality improvement project, informs notable barriers and limitations, and provides a recommendation for future practice.

The pre- education phone interviews were conducted to assess participants overall understanding of the benefits of secondary referrals for uncontrolled diabetics, comfort level on educating on the benefit of secondary referral team members, and perceived barriers preventing secondary referral submission. Participant answers to the phone interviews helped tailor the educational presentation to the needs of the participants. Questions 5, 6, and 7 primarily were directed at answering these questions. Perceived barriers that were aligned amongst most participants were related to patient barriers, particularly patient engagement. Participants stated that patients often do not have the time off work or reliable transportation that ultimately impacts the patient's ability to make appointments. All participants stated that they felt "adequate" or better, in their understanding of what secondary referral team members can assist the patient

with. Participants described difficulty understanding the internal referral process for the organization and felt they were missing referrals due to human error when submitting.

When comparing pre- and post- educational presentation data on secondary referral rates, the clinical research site saw a net increase in secondary referral rates. In general, secondary referral rates increased as seen above in Figure 1. The increase in secondary referrals rates was 35.5% to 41.5%, a net increase of 6%. Secondary referral rates to clinical pharmacists saw the most improvement as noted in Figures 2 and 3 above. Prior to the educational presentation, 8% of uncontrolled diabetics had seen a clinical pharmacist in the last 18 months, 15% seen in the last 12 months, 31% seen in the last 6 months, and 46% had not been seen in over 18 months. Post-educational presentation saw statistical improvement, as 4% were seen in the last 18 months, 10% in the last 12 months, 45% in the last 6 months, and 41% had not been seen in over 18 months. The increase in secondary referral rates post- educational presentation suggests that educating providers on the benefits of secondary referrals and understanding the perceived barriers to secondary referral submission resulted in a net increase in secondary referral rates in the outpatient setting for uncontrolled diabetes.

Barriers & Limitations

The availability of providers/participants during the quality improvement project timeline functioned as an unexpected barrier. This was due to three of the eight primary care providers at the clinical research site being on vacation/PTO during the initial phone interview screenings. This ultimately resulted in fewer participant involvement. However, an adequate number of participants (four) was achieved given the initial goal of four-to-eight participants.

The most significant limitation of this quality improvement project was the brief time frame. Time was limited directly in part of the allotted time frame as determined by the educational institution. Low participation rates lead to less effective data analysis for the purpose of determining if provider education and increasing awareness of secondary referral services resulted in an increase of secondary referral rates for uncontrolled diabetic patients. Lastly, participant responses during the initial phone interviews were limited based on their individual knowledge of the clinical research site's protocols and provided services due to their recent employment status within the organization. Excluding participants with less than two years' employment history within the organization may have provided more robust phone interview answers and discussion.

Recommendations

Expansion of this educational training across the organization (including all providers and clinics) would provide more robust data regarding the validity of replication and determining statistical significance. It was difficult to determine the engagement of the participants as the interviews and educational presentation were not completed in-person. In-person training could increase participant participation as the learning environment is often perceived as more engaging and valuable (Photopoulos et al., 2022). Education could be provided to all providers during in-person quarterly provider meetings. Additionally, the clinical research site could consider collecting HbA1c values of patients, as well as secondary referral rates. Collecting both data points would better determine the level of efficacy secondary team members have towards decreasing negative health outcomes and improving glycemic control.

Conclusion

Diabetes remains one of the most prevalent disorders in the United States and can be well-managed through modern medicine including: metformin, dipeptidyl peptidase 4 (DPP-4) inhibitors, glucagon-like peptide 1 (GLP-1), sodium-glucose cotransporter 2, and insulin, as well as lifestyle changes (Freedman et al., 2019). Diabetes management is not well adhered to resulting in high healthcare costs/burden and poor patient health outcomes. Identifying perceived barriers and facilitators for the submission of secondary referrals allows for a more consistent approach to diabetic management, often catching gaps in care that may have been overlooked previously. With current research suggesting the benefits of secondary referrals, such as clinical pharmacist educators facilitating up to 1% decreases in HgA1c, it is imperative that secondary referral submissions occur at every visit that identifies a person having uncontrolled diabetes (HgA1c ≥ 8%) (Henry et al., 2013). Enacting system level protocols allows for more concise data collection to further understand quality improvement metrics and how they relate to a specific outcome(s) (LoBiondo-Wood & Haber, 2017).

The goal of this project was to increase secondary referral rates for uncontrolled diabetes in the outpatient setting. This quality improvement project determined that assessing barriers and facilitators of secondary referrals through the development of a tailored educational presentation was a successful intervention. This project indicated that a 15-minute pre- recorded educational presentation regarding the benefits of secondary referrals and the barriers impacting patient engagement increased secondary referrals within this clinic system. It is recommended this educational presentation be implemented system wide with the goal of increasing secondary referral rates for uncontrolled diabetes across all clinic sites and providers. If implemented, the organization could see improvements in the utilization of secondary referral services and overall better patient health outcomes.

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Appendix A

DNP Project: Phone Interview Guide

Disclaimer: This phone interview will be recorded for research purposes. Only the researcher will have access to the recording for review purposes. A copy of this recording will not be provided at the conclusion of the research project. If you agree to being recorded and moving forward, please state "I agree."

1. ***Oral Consent:***

   a. You are invited to participate in the DNP research study *Increasing Rates of Secondary Referral Services in the Outpatient Setting for Patients with Uncontrolled Diabetes Mellitus*. There are no risks associated with this phone interview. By answering "I agree" to this oral consent question, you understand that your participation is voluntary, and you have the right to withdraw your consent or discontinue participation at any time. You have the right to refuse to answer particular questions by stating "I prefer not to answer." Your individual privacy will be maintained in all published and written data resulting from the study. Do you give oral consent to participate at this time? (Researcher will prompt participant for one of the following answers: "I agree" or "I do not agree.")

2. What is your current practice in the management of uncontrolled diabetes?

3. How effective do you feel you are at managing/treating uncontrolled diabetes?

4. What does your diabetic patient education look like?

5. How often do you currently refer to secondary referral services (i.e., clinical pharmacist, nutritionist, RN care coordinator, behavioral health counselor)?

   a. Do you believe you have room to improve in your secondary referral rates?

6. How well do you understand the role that secondary referral services play in diabetic management?

7. How comfortable are you at explaining the services provided by secondary referral team members?

8. What perceived barriers currently impact the submission of secondary referrals for uncontrolled diabetes, if any?

   a. Why are these barriers?

   b. How could these barriers be improved upon?

9. What benefits do you anticipate seeing if secondary referral services were better utilized for the management of uncontrolled diabetes?