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Enhancing Knowledge and Empowering Self-Management in Type 2 Diabetes: A Quality Improvement Project Utilizing Education and a Comprehensive Resource Guide

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Enhancing Knowledge and Empowering Self-Management in Type 2 Diabetes: A Quality Improvement Project Utilizing Education and a Comprehensive Resource Guide

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By

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Abstract

Introduction: Type II Diabetes (T2DM) is a prevalent and burdening disease worldwide. It is a disproportionately expensive condition, and individuals who are diagnosed and do not reach or maintain control experience a poorer quality of life (QOL) due to the debilitating complications associated with T2DM (Mustapa et al., 2022). Patient education and empowerment are necessary as adjunct treatment modalities for patients diagnosed with T2DM. This study examined the effectiveness of evidence-based education and empowerment interventions in improving health outcomes in Type II Diabetic patients.

Methods: A quasi-experimental design was employed at a Primary Care Clinic in Boca Raton, with 20 Type II Diabetic patients participating voluntarily in educational and empowerment sessions. The Institutional Review Board approved the study. Pre-intervention assessments included a questionnaire measuring baseline knowledge and attitude. The educational and empowerment interventions focused on increasing knowledge of Diabetes and complications and gauging attitudes towards empowerment in disease management. Post-intervention, the same questionnaire was distributed to measure change in knowledge levels and attitudes.

Results: The pre and posttest survey analysis displayed a significant improvement in knowledge and attitude among participants. Specifically, participants exhibited a notable increase in knowledge of Diabetes, associated complications, and lifestyle factors contributing to disease development. Furthermore, participants reported a positive shift in attitude, with increased confidence in managing their condition. The results showed significant improvement in general diabetes knowledge and complications and displayed a positive attitude toward disease understanding and empowerment.

Conclusion: The findings from this study underscored the effectiveness of educational and empowerment-based interventions in increasing knowledge and fostering empowerment among a small cohort of Type II Diabetic patients. Using a pre and posttest questionnaire design provides valuable qualitative insights into the impact of the interventions and further supports its positive influence on Type II Diabetic patients and their use as adjuncts to medication-related treatment plans. While these results are encouraging, future research with larger samples and long-term follow-up is warranted to validate the findings and explore the sustainability of knowledge and attitude improvements over time. Future studies examining the role of patient empowerment and education in Type II Diabetes management could further improve quality of life (QOL) in patients.

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Introduction

The incidence of type II diabetes (T2DM) in the United States has increased significantly over recent years. Lack of proper patient education can lead to decreased diabetes self-management, lower patient satisfaction, and poor clinical outcomes. The lack of patient education and empowerment is a significant problem for several reasons. Without proper education, patients may not fully understand their condition, its potential complications, and the importance of adhering to treatment plans. This can lead to inadequate disease management, including improper medication use, irregular blood glucose monitoring, and difficulty in following a healthy lifestyle. Type II diabetes requires ongoing management to prevent complications such as cardiovascular disease, neuropathy, nephropathy, and retinopathy. Lack of education may result in delayed or ineffective self-care, leading to a higher risk of developing these complications.

Proper education helps patients understand the significance of their prescribed medications and how to take them correctly. Without this knowledge, patients may forget to take their medications or may not adhere to the prescribed dosages, impacting their blood sugar control. Furthermore, education is crucial in promoting healthy lifestyle choices, including diet and physical activity. Without proper guidance, patients may struggle to make informed choices and may continue with unhealthy habits that worsen their diabetes management. Improving the self-efficacy of type II diabetic patients is critical to improving health outcomes.

Problem Statement

Uncontrolled diabetes can have life-threatening complications, such as heart disease, kidney disease, retinopathies, and neuropathies. Patients with type II diabetes are two times more likely to have heart disease than non-diabetic individuals; additionally, one in three adults with

type II diabetes also has chronic kidney disease, and many of them are unaware of it, making it a significant public health issue (CDC, 2022). To address this metabolic anomaly and its adverse outcomes, scholars have developed algorithms and tools geared towards hitting key measures such as hemoglobin A1C <8%, a yearly microalbumin/creatinine check, and foot and eye exams while improving patient satisfaction, but not enough focus has been highlighted on the importance of patient involvement in their care plans. Uncontrolled diabetes paired with any complication has a significant impact on the overall QOL; the very presence of diabetes already deteriorates a patient's quality of life, but with the coexistence with other illnesses, the adverse effects are tripled (Trikkalinou et al., 2017). Developing innovative and passion-driven tools can assist in improving health outcomes, preventing the severe complications associated with diabetes, and improving quality of life.

Significance

Diabetes is a global health concern that affects millions of people worldwide. According to the International Diabetes Federation (IDF), an estimated 537 million people have diabetes worldwide, expected to rise to 643 million by 2045 (IDF et al., 2021). In the United States, approximately 34.2 million people, or 10.5% of the population, lived with diabetes in 2018, including 7.3 million adults with undiagnosed diabetes (CDC, 2023). The prevalence of type II diabetes has increased drastically, and the upward trend is expected to continue. Several factors, such as sedentary lifestyles, unhealthy diets, obesity, genetics, urbanization, and social and environmental backgrounds, exist. These factors are complex and are often interconnected, posing a challenge to addressing the prevalence of type II diabetes (WHO, 2016). These statistics shed light on the impact of diabetes and the urgent need for innovative treatment strategies and effective prevention measures.

Uncontrolled diabetes has several long-term complications that lead to increased healthcare costs and comorbidities, all of which significantly impact a patient's quality of life. Chronically elevated serum glucose levels have the potential to damage blood vessels, nerves, and organs. Kidney disease, heart disease, and stroke are common complications of uncontrolled type II diabetes. Another common complication, diabetic neuropathy, affects up to 50% of individuals. (American Diabetes Association, 2021). This complication can cause tingling, numbness, and pain in the feet, legs, and hands, and over time, may result in foot ulcers, infections, and even limb amputations (American Diabetes Association, 2021). Another complication, retinopathy, can ultimately cause blindness.

Moreover, Gudala et al. (2017) found that people with type II diabetes were 1.6 times more likely to develop dementia than those without type II diabetes, and the risk increased even more with poor glycemic control. Also, a study by Rawlings et al. (2021) found that older populations with poor glycemic control had a higher risk of cognitive decline, measured by the Montreal Cognitive Assessment (MoCA) test. Therefore, it can be concluded that improving glycemic control may help prevent an intellectual decline in populations with type II diabetes. Furthermore, poor glycemic control has a significant impact on mental health. A study by Roy et al. (2021) found that individuals with diabetes were more likely to experience signs of depression and anxiety than those without type II diabetes. The authors suggest the importance of healthcare providers screening for depression and anxiety in patients with type II diabetes and that they provide mental health support. Through the promotion of patient education and empowerment, long-term complications can be prevented, ultimately meeting nationwide health goals.

Several knowledge gaps exist when properly addressing uncontrolled type II diabetes. A study by O'Connor et al. (2021) found that providers rely too heavily on standardized treatment guidelines and fail to consider a patient's needs and preferences, leading to suboptimal glycemic control and increasing the likelihood of complications. Secondly, engaging and encouraging patient involvement is critical to achieving optimal diabetes management.

Effective communication and instilling a sense of trust can lead to patients feeling engaged and empowered to participate in their care actively, adhere to treatment plans, and ultimately achieve improved health outcomes. A study by Weinger et al. (2011) found that patients who felt they had a good relationship with their provider felt comfortable asking questions and were more likely to adhere to their medication regimen.

Lastly, patients with type II diabetes can become more self-sufficient in their healthcare by being educated about the disease process, causes, symptoms, and treatment options. Type II diabetic patients must work with their healthcare providers to develop an individualized plan that includes keeping track of their regular glucose levels, medication management, lifestyle changes, and the critical goals required to prevent complications associated with type II diabetes.

In summary, the incidence of type II diabetes has been increasing significantly in the United States, leading to life-threatening complications. Developing innovative and passion-driven tools can assist in improving health outcomes, preventing complications associated with the disease, and improving quality of life. It is essential to achieve control through multifactorial approaches, including patient education and empowerment, lifestyle modifications, and ongoing monitoring of serum glucose levels. Patient education and empowerment can help individuals with type II diabetes become more self-sufficient and confident in managing their disease.

Summary of the literature

The search found six studies that analyzed the impacts of patient education, self-efficacy, and factors associated with empowerment in type II diabetic patients. The first study by Yao et al. investigates the relationship between self-efficacy and self-management behaviors among patients with T2DM. The authors noted that following a healthy diet, exercising regularly, monitoring blood glucose levels, and taking medications as prescribed are critical for managing type II diabetes. However, many patients struggle to maintain these behaviors due to various factors, including low self-efficacy. The study showed that self-efficacy was positively associated with self-management behaviors among Chinese patients with type II diabetes (Yao et al., 2019). Specifically, patients with higher levels of self-efficacy were more likely to engage in self-management behaviors, such as adhering to a healthy diet, exercising regularly, and monitoring blood glucose levels.

Furthermore, the authors found that education level and diabetes-related knowledge were also significant predictors of self-management behaviors. Overall, this study highlights the importance of self-efficacy in promoting self-management behaviors among patients with type II diabetes. By identifying factors influencing self-efficacy, healthcare providers can develop interventions to improve patients' self-management behaviors and ultimately improve diabetes management outcomes. However, it is essential to note that this study was conducted in a specific population of Chinese patients with type II diabetes and may not be generalizable to other populations or contexts.

The study by Simonsen et al. (2021) explored how person-centered primary care, community resources, social support, and other life-contextual circumstances relate to empowerment among adult patients with type II diabetes, focusing on age differentials.

Empowerment is an essential aspect of diabetes management, as it refers to a person's ability to manage their condition and make informed decisions about their health. The authors also reviewed the literature on person-centered primary care and its relationship with diabetes management, finding that patient-centered care has been associated with better outcomes for patients with diabetes (Simonsen et al., 2021). They also reviewed the literature on community resources and social support, noting that these factors have been linked to improved diabetes management and self-care behaviors. Access to healthy foods, safe places to exercise, community health fairs, workshops, and support groups can facilitate healthy behaviors. Furthermore, support from family and friends can provide emotional support and encouragement. The authors then reviewed the literature on age-related differences in diabetes management and found that older adults may face unique challenges in managing their condition due to cognitive impairment and comorbidities. However, the authors noted that due to higher life experiences and coping skills, older adults may better manage their diabetes when compared to younger populations.

Furthermore, the authors also observed age differences in the empowerment sector and its predictors. Specifically, they found a stronger positive relationship between patient-centered primary care and empowerment among older adults than younger adults (Simonsen et al., 2021). They suggested this may be because older adults have more experience with healthcare systems and can better appreciate the benefits of patient-centered care. On the other hand, they also found that the relationship between community resources and empowerment was stronger among younger adults because they were more likely to utilize them (Simonsen et al., 2021).

The cross-sectional analysis by Duarte et al. (2022) aimed to examine factors related to patient empowerment in individuals diagnosed with type II diabetes. The study found that age,

diabetes knowledge, and anxiety were highly associated with patient empowerment (Duarte et al., 2022). The findings are relevant because they highlight high-risk groups and can assist providers in identifying specific resources and interventions to encourage patients with type II diabetes to be active participants in their care. Also, the authors note that self-involvement and self-care are vital components of diabetes care. However, a disproportionate number of patients fail to actively engage in self-management behaviors and display difficulties in remaining consistent with treatment compliance. In order to address these adverse outcomes, it is strongly recommended that providers not only provide clinical education on diabetes but also motivate patients to be active in the decisions regarding their treatment and self-management behaviors.

The cross-sectional study by Khowaja et al. (2023) investigated the relationship between medication compliance, lifestyle behaviors, diabetes knowledge, and empowerment among patients with type II diabetes. The authors concluded that a comprehensive empowerment-based approach is necessary to improve quality of life and prevent complications in patients with type II diabetes. The study found that with increased knowledge of diabetes, empowerment also increases. Empowerment enables patients to make informed decisions about their healthcare, which increases their confidence in managing their condition Khowaja et al. (2023).
They also highlighted the need for future studies to assess the impact of diabetes empowerment interventions on lifestyle habits, complications, and quality of life, Khowaja et al. (2023). The study encourages providers to focus on empowering individuals instead of taking an authoritative approach to managing type II diabetes. Overall, Khowjia et al.'s (2023) cross-sectional study emphasizes the importance of comprehensive diabetes care, allowing patients to control their care more. Through diabetes empowerment, patients can become compliant with medication, thus achieving glycemic control and reducing complications (Khowaja et al (2023).

The study by Chawla et al. (2019) aimed to evaluate the impact of health education on knowledge, attitude, practices, and glycemic control in patients with type II diabetes mellitus. The authors conducted a randomized controlled trial on 200 patients, divided into two groups, one receiving health education and the other receiving routine care. The study showed a significant improvement in knowledge, attitude, practices, and glycemic control in the group that received health education compared to the group that received routine care. The findings are consistent with other studies showing that health education interventions can significantly improve knowledge, attitude, practices, and glycemic control in patients with type II diabetes mellitus. The literature suggests that health education interventions can effectively improve knowledge, attitude, practices, and glycemic control in patients with type II diabetes mellitus. The study by Chawla et al. (2019) adds to this evidence and highlights the importance of incorporating health education interventions into routine care for patients with type II diabetes mellitus.

The study by Brantley et al. (2021) aimed to examine the impact of patient education and medication adherence on the health outcomes of adult diabetic patients in large urban areas of the United States. The authors argue that while diabetes is a chronic disease affecting a significant portion of the population, effective management can be achieved through patient education and adherence to medication. The study uses a cross-sectional design to examine the relationship between patient education, medication adherence, and health outcomes among 200 adult diabetic patients in large urban areas of the U.S. Overall, the literature supports the argument put forward by Brantley, Dishman, and Fick (2021) that patient education and medication adherence are critical factors in achieving good health outcomes for adult diabetic patients in large urban areas of the U.S. The authors' study contributes to this literature by

providing further evidence of the importance of these factors and highlighting the need for interventions that promote patient education and medication adherence to improve diabetes management.

Purpose/ PICO Clinical Question/Objectives

Currently, at Sanitas Medical Center Boca Raton, there is a significant amount of type II diabetic patients who are not reaching the targeted goal of a hemoglobin A1C of less than 8%, which significantly contributes to poor health outcomes. Specific barriers exist as to why patients are not reaching the desired goals and not completing the necessary blood work and follow-up; these include lack of patient education, involvement in treatment plans, and lack of patient engagement. The primary goal of this project is to increase patient knowledge through the design and implementation of educational interventions that address specific knowledge gaps and empower patients to take an active role in their diabetes management to see improved outcomes ultimately.

Type II Diabetes is a chronic condition requiring ongoing self-management, regular clinical involvement, and monitoring. Therefore, there is a great need for structured education and training programs in diabetes management for both the patient and the provider; they have been shown to improve glycemic control and reduce the risk of incidences of diabetes-related complications. Furthermore, it is critical to evaluate the effectiveness of patient-centered approaches, such as patient and provider education for diabetes management, compared to standard care without structured education. Asmat et al. (2022) mention that patient-centered approaches to managing diabetes significantly increase health outcomes in adults with T2DM. The PICO components, as outlined by Dang and Dearholt (2018), will be used to outline this clinical question. The populations to be investigated are patients with type II diabetes mellitus

between the ages of 35-65. The interventions are strategies to improve health outcomes in type II diabetic patients through patient self-efficacy tools and education. Lastly, outcomes included investigating whether there is increased patient knowledge and empowerment after intervention implementation. This question will be investigated through a literature review and analysis of six primary research articles.

PICO Question

In patients with type II diabetes, do educational interventions and a comprehensive resource guide lead to improved patient knowledge and empowerment, ultimately contributing to better health outcomes than standard tools or basic educational materials?

Objectives

This project aimed to assess whether patients know of the complications of type II diabetes and enhance knowledge through educational interventions such as a diabetes progress and resource manual and PowerPoint. Ultimately, the project aimed to see an improvement in health outcomes in type II diabetic patients.

Definition of Terms

Type II diabetes mellitus is a chronic metabolic disorder characterized by persistent glucose levels, which can be attributed to insulin secretion impairment, insulin action resistance, or a combination of both (Goyal & Jialal, 2022). *Patient-centered care* focuses on an individual's specific healthcare need; its goal is to empower patients to become more active in their health management (Kuipers et al., 2019). *Patient empowerment* is a process in which individuals gain knowledge and control over the decisions and actions that directly affect their health (Wakefield et al., 2018). *Patient engagement* is a process shaped by the patient-provider relationship and is greatly affected by the healthcare setting in which the relationship occurs (Higgins et al., 2017).

Conceptual Underpinning and Theoretical Framework of the Project

Social constructionism is a theoretical framework that emphasizes the role of social interaction and discourse in constructing knowledge, values, and identities and will be used to guide the interventions in patient education (Gergen, 2015). Concerning type II diabetes education, social constructionism can help understand how social and cultural factors shape how people think about and manage their condition. For example, a social constructionist approach might explore how cultural norms and beliefs influence people's understanding of diabetes and their willingness to adopt healthy behaviors. It also investigates how social interactions with healthcare providers, family members, and peers shape patients' self-efficacy and motivation to manage their condition (Charmaz, 2014). Using social constructionism to develop educational content and interventions involved focusing on the social and cultural contexts of diabetes management. This included analyzing patient narratives and experiences to identify common themes and patterns related to beliefs, attitudes, and behaviors related to diabetes. It might also involve working with healthcare providers to explore how their attitudes and beliefs about diabetes impact patient interactions.

In summary, social constructionism emphasizes the role of social interactions and language in shaping our understanding of the world. In healthcare, social constructionism highlights the importance of patient-provider communication and the cultural and social factors that influence health beliefs and behaviors in patients. This approach could help to identify barriers and opportunities for improving diabetes education and management by taking into account the complex social and cultural factors that shape patients' experiences and behaviors.

Methodology

Research Question

In patients with type 2 diabetes, do educational interventions and a comprehensive resource guide lead to improved patient knowledge and empowerment, ultimately contributing to better health outcomes than standard tools or basic educational materials?

Type II Diabetes is a chronic condition requiring ongoing self-management, regular clinical involvement, and monitoring. Therefore, there is an excellent need for empowering education and self-efficacy tools in diabetes management for the patient; it has been shown to enhance self-confidence and active participation in healthcare decision-making. Furthermore, it is critical to evaluate the effectiveness of patient-centered approaches, such as patient education for diabetes management, compared to standard care without self-efficacy tools and education. The American Diabetes Association recommends self-management support at four critical times: at the time of diagnosis, every year, if and when complicating factors affect self-management, and during any transition of care (ADA, 2019)

Study Design

The quality improvement project used a quasi-experimental pre-test and post-test design to assess the effectiveness of evidence-based educational material and a comprehensive Diabetes resource manual.

Setting

The Quality improvement project took place in a primary care clinic in Boca Raton in a health professional shortage area (HPSA). It is a six-room clinic home to three primary providers, one internal medicine physician, one family medicine physician, and two-family nurse practitioners. The project participants were individuals with type II diabetes, twenty were

recruited and twenty completed all parts of the intervention (Pre-test, educational voiceover PowerPoint and comprehensive resource manual).

Inclusion criteria

Patients needed to have a confirmed diagnosis of type II diabetes, and their age range must have been between 35 and 60. Participants also had to be currently receiving treatment and have provided informed consent to participate in the project.

Exclusion criteria

Patients with a diagnosis of type I diabetes, as the focus of the project is on patients with type II.

Intervention

The intervention process was initiated with obtaining support from the targeted institution which allowed for approval to be granted by Florida International University and the Institutional Review Board, letter of support and IRB. Approval can be found in the appendices. Once approval was obtained, recruitment flyers were left by the entrance of the primary care clinic and participants who were interested were instructed to formally sign up at the front desk. Participation was fully voluntary. Those who agreed to participate signed informed consent, filled out the pre-test survey and attended an information session where a voiceover PowerPoint was played and received a copy of the comprehensive resource manual, patients were then instructed to return in four weeks at the same location to complete the post-test survey.

Instruments

A twenty-point Likert scale pre-test and post-test was utilized via paper to gauge Diabetes knowledge (7), perception of self-involvement and empowerment in treatment (8), and Demographic (5). The educational intervention consisted of a 12 slides of general diabetes

knowledge and empowerment as well the handout of a 29-page resource manual. The resource manual entailed general education of diabetes such as symptoms, medications, complications, and included blood sugar and medication logs, and daily low in sugar meals. Statistical analysis of the data collected through the pre, and post test was conducted by ways of SPSS Statistics 26 through E-labs.

Data Collection

Participants who agreed to contribute their time were given a fifteen-dollar visa gift card after the initial session. All pre and post surveys were anonymous, each questionnaire consisted of a two-digit number that served to match the pre and post surveys. There was no personal or identifying information collected. The post-test was used to gauge the effectiveness of the educational intervention and the comprehensive resource manual. pre-survey to assess their understanding of type II diabetes management, managing their blood sugar levels, whether they have received education about the complications associated, identifying potential complications, and familiarity with lifestyle interventions for managing type II diabetes.

Data Analysis

Collected data was examined using the E-labs SPSS Statistics 26. The Likert Scale responses were gathered by concepts and a mean percentage, and score were calculated. Paired t-tests were conducted to compare mean perception, knowledge, and screening impact. For all domains a t and p values were obtained.

Protection of Human Subjects

All investigators in the study completed certification for the Collaborative Institutional Training Initiative (CITI) program training. This certification focused on the ethical responsibilities in research being conducted with Human Subjects. The project was reviewed and

approved by Florida International University's Institutional Review Board and deemed it Exempt via the Exempt Review process on July 31, 2023. The subjects of the study were patients with Type II Diabetes and were made aware that participation was strictly voluntary without any penalties for not participating or completing. Participants were also made aware they could withdraw from the study at any time. Prior to introducing the pre-test questionnaire, participants were given a detailed introduction of the study, the steps, and timeframe it entailed. Participant information remained anonymous, and no personal identifying collection was collected. Data was stored and managed for reporting using a password-protected laptop. A secure link to the electronic medical record was used to access patient information. All forms included handwritten and filled-out information was disposed of using the company shredding box after completing the project.

Benefits

Participants gained an increase in knowledge of Type II Diabetes and empowerment in order to become more engaged in their care through self-management. The QI project benefited society by contributing to increased patient knowledge and empowerment through the use of education and a comprehensive resource manual. Through the QI project dissemination of the resource manual in other communities, this QI project contributed to society by engaging patients in making health care decisions.

Risks

Participants are not expected to encounter any harm, discomfort, or risk through participating in this QI project. Participants are no way obligated to participate and may withdraw from the study at any time.

Results

A preliminary analysis indicates a substantial improvement in both knowledge and attitude towards empowerment among participants who underwent education and empowerment interventions. Participants demonstrated a better understanding of their condition and its complications. Patients also reported a notable shift in attitude/perception with expressing increased empowerment and confidence in managing their condition. Table 1 displays the mean differences from the pre and posttest of perception of empowerment and Table 2 displays the mean pre and posttest differences of knowledge. Graphs 1 displays the total age percentages of participants and Graph 2 displays total participant gender percentages.

Table 1

Perception of Empowerment and Self-Involvement in care

	Pre-Intervention	Post-Intervention	t-value	P-Valve
Mean	2.35	9.15	-19.717	.000
SD	1.387	.988		

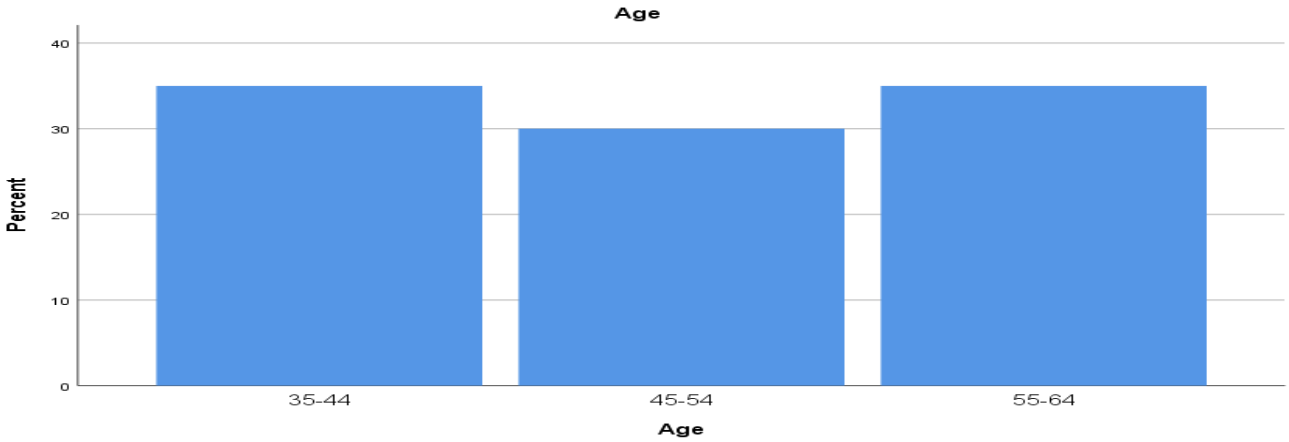
Table 2

Knowledge Paired t-Test Results

	Pre-Intervention	Post-Intervention	t-value	P-Valve
Mean	1.80	4.30	-9.379	.000
SD	1.152	.571		

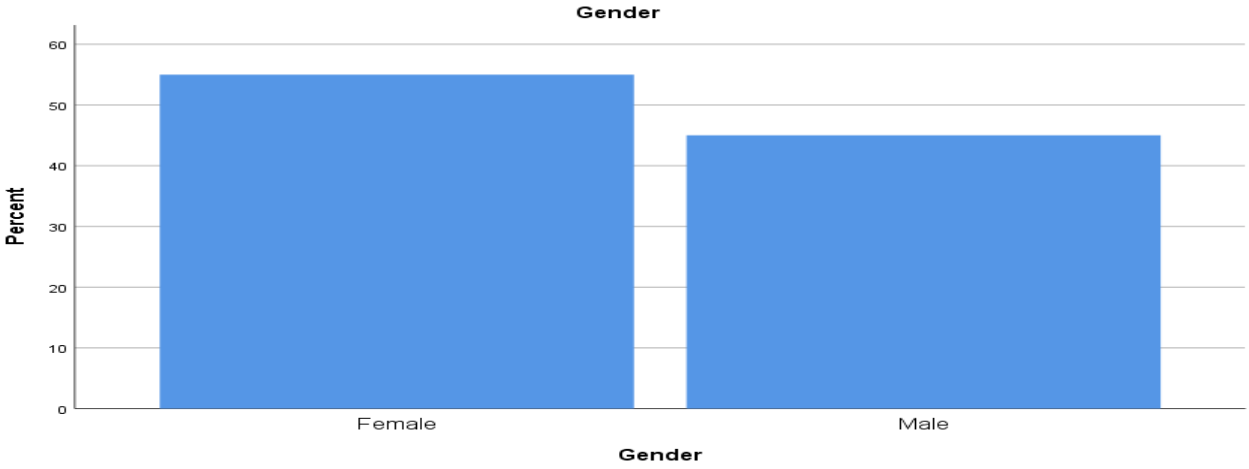
Graph 1

Participant age percentages



Graph 2

Participant gender percentages



Discussion

The results of the two-tailed sample t-test was used to determine if the projects interventions on patient education and empowerment have demonstrated statistically significant outcomes. As evidenced by a p-value of .000, This result strongly supports the effectiveness of our intervention, suggesting that the observed improvements in patient education and empowerment are highly unlikely to have occurred by random chance alone. These findings

underscore the success of the projects efforts to enhance patient engagement and knowledge within the quality improvement project.

Limitations

Using a pre- and post-survey to assess knowledge change in quality improvement projects can provide valuable insights; however, the risk of biases exists with this modality. Social desirability, recall, and response bias may occur. Participants may provide responses they believe are socially desirable rather than their actual knowledge or behavior. They may also need help recalling their responses from the pre-survey, especially with a four-week gap between questionnaires. Participants may also respond to the surveys due to factors unrelated to educational interventions, such as question fatigue. These can impact the reliability of the data and introduce measurement errors. Actual limitations found during the study are related to the survey number of questions and post-survey completion. The initial sample amount of the study was 25. However, only 20 participants returned for the post-survey, and due to anonymity, those participants were unable to be contacted for follow-up. The smaller sample size may limit the statistical power of the findings and may lead to uncertainty in results. Also, some of the participants felt that the survey needed to be shorter and consisted of fewer answer options, which led to confusion. Lastly, with a control group, it was easier to solely attribute any changes in improvement to the quality improvement project.

Implications for Advanced Practice Nursing

Improving health outcomes in patients with type two diabetes is imperative as it is a chronic disease that affects a significant number of the population and can lead to severe complications if not managed effectively (ADA, 2021). An advanced practice nurse is crucial in

managing diabetes care and outcomes. They are integral to the care team and approach patient care with understanding and compassion, which is necessary in managing type II diabetes. One of the primary implications of the results is that it can lead to better health outcomes such as glycemic control, improved quality of life, and reduced risk of complications, which can be achieved through enhanced education and empowerment utilizing evidence-based interventions. The project promotes patient empowerment and educates patients to participate in their care.

Another implication of improving diabetes outcomes is that it can lead to cost savings in healthcare. Diabetes is a costly disease in terms of direct medical costs and indirect costs such as lost productivity (CDC, 2021). Improved outcomes can lead to reduced healthcare costs by reducing the need for hospitalizations, emergency room visits, and other costly interventions. Advanced practice nurses are instrumental in implementing evidence-based approaches, collaborating with other providers, and identifying cost-saving opportunities (Zadvinskis et al., 2019). Finally, Diabetes management can be complex and requires ongoing self-management, which can be challenging for patients. However, with increased knowledge, empowerment, and engagement, patients will be engaged in their care and feel confident and capable of managing their disease, improving their quality of life.

Dissemination and Sustainability

Sustaining change in this quality improvement project would require several efforts—ongoing monitoring of the effectiveness of the comprehensive resource manual and possible focus groups to obtain patient feedback. Secondly, providing information sessions and training to discuss project outcomes and the impact of the educational content and resource guide could prove to be beneficial in sustaining change. Furthermore, collaborating with community organizations in Boca Raton and other communities to continue disseminating the resource guide

would contribute to sustaining the project initiatives. Moreover, hosting or participating in community awareness events that offer accu-check readings, conversations with providers regarding control of type 2 diabetes, and other resources to bring mindfulness about prevention could be valuable in sustaining the QI project proposals. Lastly, through a partnership made at a health fair, a primary care clinic in Miramar has agreed to make the project resource guide available to their patients.

Conclusions

In conclusion, the study has demonstrated the effectiveness of targeted educational and empowerment interventions in increasing knowledge and empowerment levels among patients with Type II Diabetes. The findings underscore the importance of tailored approaches in addressing the unique needs of patients managing chronic conditions such as Type II Diabetes. Through the combination of educational modules and resource guides, participants displayed a noteworthy improvement in their understanding of diabetes, lifestyle modifications, and complications and their attitudes towards being empowered by their healthcare providers. The observed increase in knowledge and attitude suggests that well-designed educational interventions can successfully bridge informational gaps and empower patients with the necessary tools for self-management. Moreover, the positive shift in participant attitudes reflects the potential of educational and empowerment strategies in instilling confidence for sustained lifestyle changes.

The patient-centered approach of the interventions implemented provides a holistic framework for addressing the complex challenges associated with Type 2 Diabetes. As healthcare providers and researchers continue to explore innovative ways to enhance diabetes care, the results of this quality improvement project emphasize the significance of patient-

centered, empowerment-based strategies. Future initiates in diabetes management should consider incorporating similar comprehensive interventions to empower patients, increase knowledge, and foster positive attitudes, ultimately leading to improved health outcomes.

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Appendices

IRB Approval Letter

FIU | FLORIDA INTERNATIONAL UNIVERSITY

Office of Research Integrity
Research Compliance, MARC 430

MEMORANDUM

To:	Dr. Rosa Roche
CC:	Sandra Guiteau
From:	Kourtney Wilson, MS, IRB Coordinator KMW
Date:	July 31, 2023
Protocol Title:	**"**Enhancing Knowledge and Empowering Self-Management in Type 2 Diabetes: A Quality Improvement Project Utilizing Education and a Comprehensive Resource Guide"

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #:	IRB-23-0413	**IRB Exemption Date:**	07/31/23
TOPAZ Reference #:	113454		

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

KMW

Recruitment Flyer

DO YOU HAVE TYPE 2 DIABETES?

Come join us for a session of information, healthy snacks, and beverages. Get a $15 visa gift card just for joining us.

August 25, 2023
12pm-3pm
Sanitas Boca Raton, 880 NW 13th St, Boca Raton, FL 33323

If interested, sign up at the front desk

Pre and Post Survey Questionnaire

1. Gender:
    A. Male
    B. Female
    C. Other

2. Age:
    A. 25-34
    B. 35-44
    C. 45-54
    D. 55-64
    E. 65 or older

3. Have you been diagnosed with type 2 diabetes?
    A. Yes
    B. No

4. Have you received any formal education or training on type 2 diabetes and its complications?
    A. Yes
    B. No

5. Please rate your current knowledge level about type 2 diabetes and its complications on a scale of 1 to 5, with 1 being very low and 5 being very high.
    A. 1
    B. 2
    C. 3
    D. 4
    E. 5

6. Which of the following complications are associated with type 2 diabetes? (Select all that apply)
    A. Heart disease
    B. Kidney disease
    C. Vision problems or blindness
    D. Nerve damage or neuropathy
    E. Stroke
    F. High blood pressure
    G. All of the above

7. Which lifestyle factors do you think can contribute to the development of type 2 diabetes? (Select all that apply)

A. Sedentary lifestyle (lack of physical activity)
B. Unhealthy diet (high in sugar and saturated fats)
C. Obesity or being overweight
D. Smoking
E. Family history of diabetes
F. All of the above

8. Do you know what HbA1c represents in diabetes management?
    A. Yes
    B. No

9. What are the common symptoms of high blood sugar levels in type 2 diabetes? (Select all that apply)
    A. Frequent urination
    B. Increased thirst
    C. Fatigue or tiredness
    D. Blurred vision
    E. Unexplained weight gain
    F. None of the above

10. Are you aware of any strategies for preventing or managing complications associated with type 2 diabetes?
    A. Yes
    B. No
11. Are you currently taking any medications or insulin to manage your type 2 diabetes? (If not diagnosed, please skip this question)
    A. Yes
    B. No

12. How would you rate your level of involvement in your type 2 diabetes care on a scale of 1 to 5, with 1 being very low and 5 being very high?
    A. 1
    B. 2
    C. 3
    D. 4
    E. 5

13. How informed do you feel about your type 2 diabetes, its management, and potential complications?
    A. Very uninformed
    B. Somewhat uninformed
    C. Neutral
    D. Somewhat informed
    E. Very informed

14. How often do you engage in shared decision-making with your healthcare provider regarding your type 2 diabetes care?
    A. Never
    B. Rarely
    C. Sometimes
    D. Often
    E. Always

15. Are you satisfied with the level of involvement you currently have in your type 2 diabetes care?
    A. Very dissatisfied
    B. Somewhat dissatisfied
    C. Neutral
    D. Somewhat satisfied
    E. Very satisfied

16. How important is it for you to actively participate in decisions about your type 2 diabetes care?
    A. Not important at all
    B. Somewhat unimportant
    C. Neutral
    D. Somewhat important
    E. Very important

17. Have you received any education or training on self-management skills for type 2 diabetes?
    A. Yes
    B. No

18. How confident do you feel in managing your type 2 diabetes on a day-to-day basis?
    A. Very unconfident
    B. Somewhat unconfident
    C. Neutral
    D. Somewhat confident
    E. Very confident

19. Do you have access to resources or tools that support your involvement in your type 2 diabetes care?
    A. Yes
    B. No

20. On a scale of 1 to 5, with 1 being very low and 5 being very high, how important is it to you to feel empowered by your healthcare provider?
    A. 1
    B. 2
    C. 3

D. 4
E. 5

Resource Guide

Diabetes Self-Management Resource Manual

Let's Get Empowered!

Please make sure to use this resource manual only as a reference and seek regular medical advice.
Thank you for taking an active role in managing your Diabetes!

Disclaimer:

This manual is not intended to replace professional, medical or psychological advice. You should seek proper professional evaluation and treatment for any unusual, unexplained, severe, or persistent symptoms. Please only use this manual as a guide along with your knowledge, good judgment, and partnership with your primary care provider.

Table of Contents

Overview of Self-Management

Self-Management refers to the active role someone takes in managing their health on a day-to-day basis.

It involves making informed decisions and making lifestyle changes that promote overall health and effective management of a condition.

The things we know about something is very much affected by how we think about it, our thoughts have a great impact on how we handle health problems.

Good self-managers have the skills to deal with their illness, keep on with their life, and deal with emotions.

Remember:

Life does not stop because you have a chronic illness like Type 2 Diabetes, you are the most important part of your healthcare team!

It's important to use self-management skills to feel like you can handle all that comes with managing Type 2 Diabetes! YOU CAN DO THIS!

You are not to blame, Type 2 Diabetes is caused by a combination of reasons, but you have the power to take action!

You are not alone, support is available when you need it, just give your primary care provider or chronic health coach a call.

You are the MANAGER of your health!

Self-Management in Diabetes

Self-Management in Type 2 Diabetes means keeping your sugar levels in a safe range, following up with your Primary Care Provider to detect early problems and taking action to prevent complications.

Self-Management tools include:

- Monitoring your blood sugar
- Recognizing symptoms and knowing what to do
- Following a balanced meal plan
- Exercising regularly
- Managing stress and sick days
- Taking all medication prescribed and reporting symptoms that may make you want to stop
- Getting necessary lab tests, physical exams and vacci

What is Diabetes?

Diabetes is a condition where the sugar (glucose) levels in your blood become **too high**. Imagine your body as a car, and glucose is the fuel that keeps it up and running. To get that fuel into the cells where it's needed, your body uses a hormone called **insulin,** which acts like a key to unlock the cells. Sometimes the body **resists insulin** and that leads to less sugar going into your body's cells and into the blood, causing high sugar levels, which leads to **Type 2 Diabetes**.

Another kind of Diabetes is **Type 1**. This happens when the the insulin maker is damaged.

Last but not least, there is **Pre-Diabetes**, this occurs when the sugar levels are higher than normal but not high enough to be called Diabetes.

What puts you at a high risk for Type 2 Diabetes?

- Having a family member with Diabetes
- Being overweight
- Not enough exercise and physical activity
- Age: The risk increases with age, especially after the age of 45.
- Unhealthy Diet: Diets high in processed foods, sugar, and unhealthy fats contribute to the risk.
- High Blood Pressure: Hypertension is a risk factor for Type 2 diabetes.
- Smoking and History of Heart Disease

It's important to remember that having one or more risk factors doesn't guarantee that you will develop diabetes.

Lifestyle changes, such as maintaining a healthy weight, eating a balanced diet, being physically active, and regular health check-ups, can help reduce the risk and manage diabetes effectively. **Check out the end of this resource manual for exercise and meal ideas!**

Remember:

If you have concerns about your risk for diabetes or your diabetes care, make sure you speak to your Primary Care Doctor for more guidance.

Can Type 2 Diabetes be prevented?

In many cases, yes, Type 2 Diabetes can be prevented or delayed through making necessary lifestyle changes.

1. Maintain a Healthy Weight:

Excess body weight, especially around the abdomen, is a significant risk factor for Type 2 diabetes.
Losing even a small amount of weight can have a positive impact on reducing the risk.

2. Adopt a Balanced Diet:

Eat a healthy, balanced diet rich in fruits, vegetables, whole grains, lean proteins, and low-fat dairy products.
Limit the intake of processed foods, sugary beverages, and high-fat foods.

3. Engage in Regular Physical Activity:

Regular exercise helps control weight, improve insulin sensitivity, and lower blood sugar levels.
Aim for at least 150 minutes of moderate-intensity aerobic exercise per week, along with strength training exercises at least twice a week.

4. Monitor Portion Sizes:
Be mindful of portion sizes to avoid overeating.
Focus on eating smaller, balanced meals throughout the day**.**

5. Stay Hydrated:
Drink plenty of water and limit the consumption of sugary beverages.

6. Quit Smoking:
Smoking is a risk factor for Type 2 diabetes. Quitting smoking can improve overall health and reduce diabetes risk.

7. Regular Health Check-ups:
Schedule regular check-ups with your healthcare provider to monitor your health, including blood sugar levels.

8. Know Your Family History:
If there is a family history of diabetes, be aware of your risk and take proactive steps to reduce it.

9. Manage Stress:
Stress can contribute to the development of Type 2 diabetes or cause it to be uncontrolled. Practice stress-reducing activities such as meditation, yoga, or deep breathing exercises.

It's important to remember that risk factors vary person to person. However, adopting a healthy lifestyle can reduce the risk and contribute to overall well-being.

How is Type 2 Diabetes Diagnosed?

Usually, Diabetes is diagnosed through blood tests that measure blood sugar levels.

The common tests used for diabetes diagnosis include:

Fasting Blood Sugar Test (FBS):
This test measures blood sugar levels after an overnight fast (no food or drink except water for at least 8 hours).
A fasting blood sugar level of 126 or higher **on two separate tests** indicates diabetes.

Oral Glucose Tolerance Test (OGTT):
With this test, you must fast overnight and then drink a sugary solution. Blood sugar levels are tested at certain times after drinking the solution.

A blood sugar level of 200 or higher two hours after drinking the solution indicates diabetes.

Hemoglobin A1c Test:
This test provides an average of blood sugar levels over the past two to three months.

An A1c level of 6.5% or higher indicates diabetes.

Random Blood Sugar Test:
A blood sample is taken at a random time, regardless of when the person last ate.

A blood sugar level of 200 or higher, along with symptoms of diabetes, may indicate diabetes.

Glycated Hemoglobin (HbA1c) Test:

Similar to the A1c test, this measures the average blood sugar levels over the past two to three months.

An HbA1c level of 6.5% or higher is diagnostic for diabetes.

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Does Type 2 Diabetes cause any complications?

Heart Disease
Kidney Disease
Vision problems or Blindness
Nerve Damage
Stroke
High Blood Pressure
Foot Ulcers

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Common Symptoms of High Sugar Levels

Frequent Urination
Increased Thirst or Hunger
Extreme Fatigue or Tiredness
Blurred Vision
Unexplained weight gain

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Low Blood Sugar Symptoms

-Feeling more HUNGRY than usual
-Feeling SHAKY
-Feeling like your HEART is RACING and ANXIOUS
-Feeling SWEATY
-Feeling NAUSEA
- Headache
-Confusion
-Tingling around mouth or fingers

Do you have any of these symptoms? → Check your Blood Sugar
If your blood sugar is low (<70mg/dl) or you are having the symptoms mentioned above, Do ONE of the following:

- Drink 3 packets of sugar dissolved in water
- Drink 1 cup of juice or soda
- Eat 6 hard candies
- Take 1 tablespoon of honey

THEN, recheck your blood sugar in 15 minutes to make sure it is going up, **If your symptoms don't get better or your levels are still less than 70, call your primary care provider, do not wait, get immediate help!**

Important: Always speak to a medical professional to discuss these symptoms

If you are taking medications like:

Metformin, Nateglinide (Starlix®).

Repaglinide (Prandin®), Glimepiride (Amaryl®),

Glipizide (Glucotrol® and Glucotrol XL®),

Glyburide (Micronase®, Glynase®, Glycron® and

Diabeta®) And Insulin these directly affect the sugar levels in your blood, so look out for the symptoms listed above.

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Important Lab Measurements & Goals

Blood Pressure: Less than 140/90mmHg

Hemoglobin A1C: Less than 7 %

Cholesterol:

- LDL: <100mg/dl
- HDL: >50mg/dl
- Triglycerides: <150mg/dl

Microalbumin/Creatinine Ratio:

- 30-300mg/g

Check out the end of this manual for a tracker!

Thank you for taking the time to reads through this manual, we hope you found it helpful.

Remember: You are the Most important person on your healthcare team!

Be Empowered to Take Action!

Website Resources

https://www.floridahealth.gov/diseases-and-conditions/diabetes/type-2/index.html

https://www.floridahealth.gov/diseases-and-conditions/diabetes/Diabetes-Resources/index.html

https://www.floridahealth.gov/diseases-and-conditions/diabetes/Diabetes-Prevention-Program/index.html

https://www.floridahealth.gov/diseases-and-conditions/diabetes/prediabetes.html

https://diabetes.org/local/florida

https://diabetes.org/health-wellness

https://diabetes.org/health-wellness/medication-treatments

https://diabetes.org/health-wellness/medication/oral-medication

https://www.mybenefits.myflorida.com/health/diabetes_management_pilot_program

https://diabetes.org/food-nutrition

https://diabetes.org/food-nutrition/food-and-diabetes

References

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Appendices

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Know Your Numbers!!

Date	BP	A1C	LDL	HDL	TRIGLYC	FOOT EXAM

Blood Sugar Log Sheets

Date:	Before Breakfast	2Hrs. After Breakfast	Before Lunch	2Hrs. After Lunch	Before Dinner	Before Bed

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Date:	**Before Breakfast**	**2Hrs. After Breakfast**	**Before Lunch**	**2Hrs. After Lunch**	**Before Dinner**	**Before Bed**

My Medications

Medication	Possible Side Effects to discuss with your Primary Care Provider

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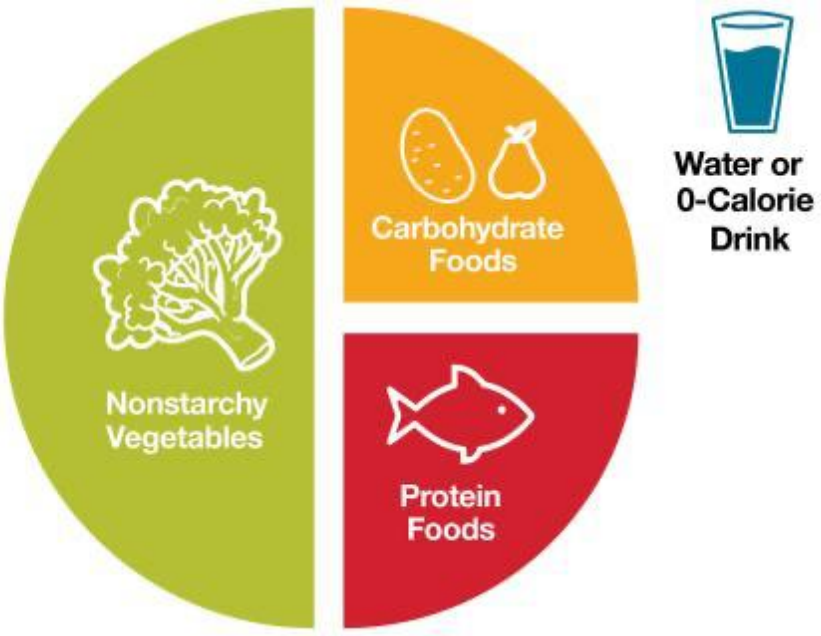
The Healthy Diabetes Plate



Daily Meal Ideas

Breakfast:

Option # 1 2 poached eggs 2 slices of multigrain bread with or without ½ tbsp of light butter **324 Kcal**	**Option # 2** 1 Hard Boiled egg 1 Kiwi, Pear, or Orange 1 slice of multigrain bread with or without ½ tbsp of light butter **234 Kcal**	**Option # 3** Green smoothie - 1 Cup Blueberries, raw - 1 Scoop sugar free Protein Powder with at least 20g of protein - 1 Cup Spinach, raw - 2 Cups Unsweetened Almond Milk * with or without ginger **293 Kcal**

Snacks:

Option # 1 ½ apple 1 tbsp peanut butter or almond butter **130 Kcal**	**Option # 2** ¼ cup of raw nuts (cashews, almonds, peanuts, walnuts, and or pistachios) **160 Kcal**	**Option # 3** 10 baby carrots 2 tbsp of hummus **90 Kcal**	**Option # 4** 1/2 Cup Blueberries, raw **43 Kcal** 8 Ounces Yogurt, Greek, non-fat, plain **130 Kcal**	**Option # 5** ½ peanut butter sandwich on whole-grain bread (1tbsp of Peanut Butter) **171 Kcal**

Lunch:

Option # 1 Turkey Sandwich: - 2 slices whole wheat bread - 4 slices. low-sodium sliced turkey - 1 slice low-fat cheese - 1 slice lettuce and 2 medium slices tomato - 1 Tbsp. light mayo and 1 tsp. Mustard **361 Kcal**	**Option # 2** Grilled Chicken Caesar Salad: - 2 oz. grilled boneless, skinless chicken breast 134 - 1 Tbsp. grated parmesan cheese 22 - 1 c. romaine lettuce 16 - 1 Tbsp. light Caesar dressing 80 **252 Kcal**	**Option # 3** 4 oz. skinless chicken or turkey grilled or baked. (Season to flavor) **130 Kcal** Cook ½ cup brown rice, barley, quinoa or other whole grain **115 Kcal**	**Option # 4** 4 oz. fish (cod, halibut, haddock, salmon) grilled or baked. (Season to flavor). **90-250 Kcal** Cook ½ cup potatoes or ½ small potato (sweet or non-white potato) **68 Kcal**

Dinner:

Option # 1 4 oz. boneless, skinless chicken breast grilled or baked. (Season to flavor) **150 Kcal** ½ cup Spanish rice **106 Kcal** 1 cup green salad 1 Tbsp. light salad dressing (vinaigrette) **20 Kcal**	**Option # 2** 4 oz. fish (cod, halibut, haddock, salmon)grilled or baked. (Season to flavor) **90-250 Kcal** ½ cup non white potatoes or ½ small potato (sweet or non-white potato) **68 Kcal** 1 cup green salad 1 Tbsp. light salad dressing (vinaigrette) **20 Kcal**	**Options # 3** 4 oz. lean beef or pork (at least 93% lean) grilled or baked. (Season to flavor) **130-284 Kcal** Cook ½ cup brown rice, barley, quinoa or other whole grain, cooked **115 Kcal**

Facility Approval Letter

Date: 7/17/23

Rosa M. Roche, PhD. APRN, PPCNP-BC
Pediatric Nurse Practitioner Program Leader
Clinical Associate Professor
Nicole Wertheim College of Nursing and Health Sciences
Florida International University

Dear Dr. Roche:

Thank you for inviting Sanitas Medical Center Boca Raton to participate in the DNP Project of Sandra M. Guiteau. I understand that this student will be conducting this project as part of the requirements for the Doctor in Nursing Practice Program at Florida International University. After reviewing the project titled "Enhancing Knowledge and Empowering Self-Management in Type 2 Diabetes: A Quality Improvement Project Utilizing Education and a Comprehensive Resource Guide". I have warranted her permission to conduct the project at this location.

We understand that the project will develop in our setting and will occur in two sessions in a five-week time frame. We are also aware that patients will be recruited and asked to participate in supporting the student to complete this project, including granting access to our facilities, requiring informed consent, disseminate a pre-test questionnaire, power point education intervention and a comprehensive resource manual and four weeks after disseminating a posttest to the recruited participants. We will provide a peaceful environment to safeguard our participants privacy as well as an adequate area to conduct the educational activity.

This project intends to evaluate if educating patients with type 2 diabetes on disease process and complications as well as providing a resource manual will aid in empowering them to actively participate in their care will improve overall health outcomes. The project will be conducted with the previous consent of patients in our facility. Prior to the implementation of this project, the Florida International University Institutional Review Board will evaluate and approve the procedures to conduct this project. Evidence suggests educating and empowering patients to take part in their care positively influences patient outcomes.

The educational intervention will be in a classroom format, will last 45 minutes and educational materials will be provided to each participant. Any data collected by Sandra M. Guiteau will be kept confidential and will be stored in a locked filing cabinet in our office. We expect that Sandra M. Guiteau will not interfere will the normal office performance, behave in a professional manner and following the office standards of care. I support the participation of our patients in this project and looks forward to working with you.

Sincerely,

Venis T. Wilder MD
Sanitas Medical Center
Regional Medical Director- Broward & Palm Beach
Cell # 917-226-6007
Office # 844-665-4827