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Accessing the Potential Role of Occupational Therapy in the Primary Care Setting

Trudy Bazy
Nova Southeastern University

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Accessing the Potential Role of Occupational Therapy in the Primary Care Setting

Trudy Bazy

Nova Southeastern University

Dr. Pallavi Patel College of Health Sciences

Department of Occupational Therapy

Post-Professional Doctor of Occupational Therapy (Dr. OT) Program

Dr. Carol Lynn R. Chevalier

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Abstract

Background. This capstone method focuses on the limitations and barriers of type diabetic education provided in the primary care setting and calls to attention the potential role that occupational can play in the primary care setting. The prevalence of type 2 diabetes continues to rise in the United States which can be managed by providing diabetic education to patients. Primary care physicians are at the forefront to provide education or avenues to which patients obtain diabetic education to manage the disorder. Although, primary care physicians are providing diabetic education patients the current amount of education has not led to increased patient outcomes.

Purpose. The purpose of this capstone project was to explore the barriers associated with the lack of type 2 diabetic education being provided to diabetic patients in the primary care setting and to gain insight into the potential role that occupational therapy can play in educating type 2 diabetics.

Method. A mixed-methods approach was performed. A physician interview was conducted and a diabetic survey was provided to N=30 patients.

Results. The results indicated that the primary care physician has identified several barriers associated with the lack of type 2 diabetic education being provided. The results also indicated a patient perspective with lack of type 2 diabetic education being provided to type 2 diabetic patients in the primary care setting.

Discussion. This capstone project has identified the need for occupational therapy in the primary care setting.

Key words: occupational therapy, diabetes, occupation, education

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Chapter 1: Introduction

Type 2 diabetes is a common form of diabetes mellitus that develops in the adult population and most often in people with obesity. It is characterized by hyperglycemia resulting from impaired insulin utilization combined with the body's inability to compensate through increased insulin production (Centers for Disease Control, n.d.). Individuals over the age of 45 or with a family history of type 2 diabetes are more susceptible to inheriting this disorder. Common symptoms of type 2 diabetes include increased thirst, increased hunger, blurred vision, fatigue, decreased sensation in hands and feet, the development of wounds/sores that will not heal on their own, and unexplained weight loss. Factors that contribute to type 2 diabetes include obesity, lack of physical activity, insulin resistance, and genetic predisposition. The chronic condition of type 2 diabetes may affect individuals' ability to participate in meaningful daily activities in their everyday lives.

Primary care physicians are the main providers of care who diagnose and manage type 2 diabetic patients in the primary care setting (Shrivastav et al., 2019). Research suggests that early detection of and education about type 2 diabetes may lead to a decrease in negative outcomes. According to Aschner (2017), patients diagnosed with type 2 diabetes should be referred to a diabetic education program, which should be available in the primary care setting. Areas to be addressed should include medication management as well as lifestyle modifications such as diet, physical activity, routines and habits. With diabetic programs being accessible in the primary care setting, diabetic patients should consistently attend education courses about diabetes to improve their outcomes (Aschner, 2017). Primary care providers are responsible for their patients' care and can direct diabetic education surrounding the disease process, nutritional strategies, skin protection techniques and environmental strategies to foster a safer home environment.

The facilitation of diabetic education in the primary care setting has proven to be effective in the management of type 2 diabetes. Specifically, early type 2 diabetic education may lead to improved management of this chronic condition. Grohmann et al. (2017), investigated the perspective of diabetic patients receiving education from a primary care team. The researchers found two beneficial themes regarding the integration of diabetic education provided in the primary care setting. First, the participants reported a feeling of inclusion among the diabetic staff and felt that a collaborative approach was taken that focused on increased knowledge of the

disorder and patient-centered goal setting. Secondly, the fostering of a supportive environment facilitated patient engagement and enhanced patient motivation to increase self-care strategies. Evidence has shown that the administration of diabetic education provided to patients has a direct correlation with a decreased cost of care and improved financial outcomes for society (Duncan et al., 2009). Diabetic education provided in the primary care setting has led to successful patient outcomes as well as decreased economic burdens to the health care system.

The information gained from improved patient outcomes and the successful implementation of diabetic education programs will allow us to examine the role that occupational therapy can play in the primary care setting (Halle et al., 2018). The role of occupational therapy in providing diabetic education is vast and represents an emerging space for practitioners in the primary care setting. Occupational therapists assist in patients performing *occupations*, which here refer to the everyday activities that people do as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. “Occupations include things people need to, want to and are expected to do” (WFOT, 2012a, para. 2). Occupational therapists are skilled at addressing chronic conditions and assessing functional deficits, lifestyle factors, habits and routine and contextual issues (American Occupational Therapy Association, 2019). In addition, occupational therapists can assess potential barriers that diabetic patients report and assist in providing effective education in areas such as nutrition, home modification, medication management, and skin protection, all while providing client-centered care to develop healthy habits and routines that will assist in the management of type 2 diabetes. The constructs of health promotion and well-being are linked to increased patient participation in occupations. Occupational therapists assist clients in adapting their daily occupations and activities related to self-care, home management, and daily routines, which in turn promotes a healthy lifestyle (American Occupational Therapy Association, 2015). Proper diabetic education is imperative for diabetic patients to apply such knowledge into their everyday life. Occupational therapists are trained to be part of the primary care team to help foster positive change.

Background and Significance

Diabetes is a chronic disease that affects how the body converts food into energy (Centers for Disease Control, 2020). Approximately 34.2 million, or 10.5%, of the US population have been diagnosed with diabetes. Diabetes is the primary cause of kidney failure, lower-limb amputations, stroke, neuropathy, skin complications and adult blindness in the US (CDC, 2020). Moreover, it is estimated that 7.3% of the US population remains undiagnosed with this chronic condition (CDC, 2020). Diabetes is the seventh leading cause of death in the US, with medical costs soaring to \$327 billion per year to treat the disorder (American Diabetes Association, n.d.). Multiple risk factors have been found to be associated with the diagnosis of type 2 diabetes, including obesity, low socioeconomic status, risky health behaviors, and limited access to health care and community resources (Centers for Disease Control, 2020). A national study conducted by the CDC (2020) confirmed that 89.0% of patients diagnosed with type 2 diabetes were overweight or diagnosed with obesity, 38% reported decreased physical activity, 68.4% confirmed a secondary diagnosis of high blood pressure, and 21.6% reported being active smokers. These risk factors can be addressed with effective patient education at the primary care level.

The present work focuses specifically on diabetes education in Michigan. In Michigan, approximately 865,00 people have been diagnosed with diabetes, with an average of 52,000 new diagnoses per year and an estimated 239,000 additional individuals yet to be diagnosed with the condition (Diabetes.org, 2020). The financial burden for the treatment of diabetes in Michigan is estimated at \$7 billion per fiscal year, while the indirect costs secondary to type 2 diabetes are estimated at \$2.7 billion per fiscal year (Diabetes.org, 2020). Thus, the total annual cost of diabetes in Michigan is estimated at \$9.7 billion, with complications faced by diabetic patients including heart disease, amputations, stroke, kidney disease, blindness and death.

In Wayne County, Michigan, the population is estimated at 1,749,343. Approximately half of this population is considered to have prediabetes (midiabetesprevention.org, 2013). The average income is approximately \$47,301, lower than other areas of the state (midiabetesprevention.org, 2013). Moreover, the average education level is lower than the state average as well, with 86.5% of people reporting having graduated from high school and 23.9% reporting having attained a Bachelor's degree or above. The large number of type 2 diabetes patients in the state of Michigan, and specifically in Wayne County where the effects of the

condition are exacerbated by lower average education, places a burden on the state and its population. The facilitation of diabetic education may decrease the occurrence of complications and foster healthy behavior change within the type 2 diabetic population.

Type 2 diabetes also has profound effects in the rest of the world outside the United States population. According to the World Health Organization (2021), approximately 422 million people worldwide have been diagnosed with diabetes. According to Dia et al., (2018), primary care physicians do not sufficiently adhere to guidelines for the improvement of diabetic care in the United States. Unless providers follow these specific treatment protocols, patients will continue to lack the knowledge needed to successfully manage their diabetes. In another study, Stoop et al. (2019) sought to identify patient perspectives in regard to diabetic needs and primary care. Their participants expressed that psychosocial needs were not sufficiently addressed in their treatment plans. Donnelly et al. (2013) found in their study that the addition of occupational therapy in the primary care setting may lead to more successful outcomes in diabetic patient education. Evidence suggests that occupational therapists can promote patients' independence in diabetic management by providing creative ways to address diabetic self-management (Shen & Shen, 2019). Research has shown that diabetic education in the primary care setting is lacking; thus, the facilitation of occupational therapy in this setting may improve type 2 diabetic patients' overall outcomes.

According to Funnell et al. (2008) diabetic self-management education is a crucial element of care for all type 2 diabetic patients and is considered necessary to increase positive patient outcomes. The National Standards of Diabetes Self-Management and Education are as follows for primary care practice guidelines:

- A description of the diabetic process and treatment options
- The incorporation of nutritional education in lifestyle habits and routines
- Including physical activity in lifestyle routines
- Utilizing medication management safely and effectively
- Monitoring glucose levels
- Detecting and preventing chronic conditions
- Developing personal strategies to address psychosocial barriers
- Developing strategies to promote health and facilitate behavior change

Problem Statement

There is a lack of diabetic education provided to diabetic patients in the primary care setting. Although research findings show a limited amount of education being provided to diabetic patients, this amount is not sufficient to create positive behavioral change in diabetic patients' lives. As a direct result, type 2 diabetic patients are not able to fully manage the disease effectively unless they are provided with diabetic education and strategies to treat diabetes.

Unfortunately, the educational needs of diabetic patients are not being addressed adequately to enhance the well-being of these clients. In addition, patients have reported that primary care physicians have limited time to educate them about chronic disease management (Freed et al., 2014). Although, the occupational therapist role in primary care is still emerging, occupational practitioners are skilled in the management of chronic conditions. According to Wilcock and Townsend (2019), occupational therapy practitioners recognize that health is supported and maintained when clients are able to engage in their home, school, workplace, and community life. Moreover, occupational therapy practitioners focus on occupations and are also in evaluating and treating a variety of client factors that either disrupt or empower those occupations, which can influence clients' engagement and participation in positive health-promoting occupations (Wilcock & Townsend, 2019). Evidence has shown that the addition of occupational therapy as part of an interdisciplinary team can assist in diabetic patients' management of type 2 diabetes.

Purpose and Objectives

The purpose of this study is to determine 1) whether there is a gap in patient education provided to diabetic patients in the primary care setting and 2) if so, whether occupational therapists can address this gap. Evidence suggests that diabetic education has a direct correlation with increased diabetic management. The outcomes gained from this study may provide information for the role that occupational therapists can provide in the education of diabetic patients. The capstone objectives include:

- Identify primary care physician barriers to diabetic education
- Identify barriers of diabetic patients
- Identify types of education provided to diabetic patients
- Identify the potential role of occupational therapy in a primary care setting
- Call attention to occupational therapy's role in the education of diabetic patients

Definition of Terms

Advocacy: Demonstrating a genuine concern for an individual's well-being by providing support in the pursuit of that individual's cause (Stover, 2016).

Activities of Daily Living (ADL's): Activities that focus on taking care of one's body and that are performed on a routine basis (American Occupational Therapy Association, 2014).

Barrier: an obstacle that prevents movement or access to something (Merriam-Webster, n.d.)

Chronic Condition: A condition lasting one year or more that requires continuous medical attention or limits activities of daily living (CDC, n.d.).

Diabetic Education: The process of increasing the knowledge, skills and abilities necessary for diabetic care (diabeticjournals.org, n.d.).

Freire's Liberation Model: An alternative model of education that supports human liberation and makes people subjects of their own learning, in which education is embedded in experiences, resulting in individuals developing critical thinking skills (Freire, 1972).

Grounded Theory: A research method utilized to enable the development of a theory to explain the primary concern of a problem and how it can be resolved (Glaser, 1992).

Health: The state of total physical, mental and social well-being (World Health Organization, n.d.)

Health Belief Model: A theoretical model developed to guide health promotion and disease prevention programs. The health belief model describes the relationships between a person's beliefs about health and his or her health specific behaviors (Rosenstock, 1974).

Health Disparities: A particular type of health difference that is closely linked or associated with economic, social or environmental disadvantage. Health disparities affect groups that have systematically faced significant obstacles to their health, which may be based on race or socioeconomic status (Healthypeople.gov, 2020).

Health Promotion: The process for enabling individuals to gain control over and improve their overall health (World Health Organization, n.d.).

Health Literacy: The degree to which people have the capacity to obtain, process and understand basic health information that will assist them in making educated health decisions (National Library of Medicine, n.d.).

Instrumental Activities of Daily Living (IADL's): Activities that support living daily life in the home and in the community (American Occupational Therapy Association, 2014).

Intervention: The act or process of interfering with an outcome or condition (Merriam-Webster, n.d.)

Occupational Therapy: The therapeutic use of occupations, or activities of everyday life, provided to individuals, groups, populations, and organizations. Occupational therapy services are provided to address rehabilitation, habituation and the promotion of health and wellness for individuals who either have or are at risk of a developing an illness, disease, condition, or impairment that can limit their participation in an activity. Occupational therapy addresses areas of cognitive, physical, psychosocial and sensory perceptual contexts to support engagement in occupations to enhance quality of life (American Occupational Therapy Association, 2011).

Occupations: The everyday activities that people engage in as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. “Occupations include things people need to, want to and are expected to do” (WFOT, 2012a, para. 2).

Occupational Performance: The ability to perceive, recall, play, and carry out roles and routines for the primary purpose of self-maintenance, to be productive in response to the demands of the internal/external environment (Occupational performance Model, 2014).

Occupational Engagement: Being occupied by performing an occupation (Reed, 2008).

Occupational Participation: Engagement in activities of daily living, work, and play that are included in one’s sociocultural context and considered necessary to oneself (Kielhofner, 2002).

Occupational Empowerment Model: A model that shows that living in a disempowering environment can lead to poor behavior, bad habits, and unhealthy living. This model aims to empower patients through the use of occupations and facilitate the development of competence (Fisher & Hotchkiss, 2008).

Patient: An individual that is either awaiting medical care or treatment (Merriam-Webster, n.d.)

Primary Care: The comprehensive first contact with patients with any undiagnosed sign, symptom or concern. Areas addressed by primary care include health promotion, disease prevention, health maintenance, counseling and patient education of acute or chronic illnesses (American Academy of Family Physicians, n.d.)

Primary Care Physician: A specialist who provides definitive care to patients and takes responsibility for providing the patient with comprehensive care (American Academy of Family Physicians, n.d.)

Transtheoretical Model of Change: A health behavior change model that involves six stages

including precontemplation, contemplation, preparation, action, maintenance and termination (Prochaska & Velicer, 1997).

Type 2 Diabetes: The most common type of diabetes, which occurs when the patient's blood glucose is too high due to dysfunction in the body's production or utilization of insulin, the hormone that regulates cells' absorption of glucose (National Institute of Diabetes and Digestive and Kidney Diseases, n.d.).

Kawa Model: An occupational therapy model that uses life as a metaphor using contextual elements to represent an individual's life (Iwama et al, 2006).

Well-being: Judging life with a positive outlook and feeling good (Centers for Disease Control, 2018).

Chapter 2: Literature Review

A search for relevant literature revealed a lack of recent literature published related to primary care physician shortages, lack of time for primary care physicians and cost effectiveness of diabetic education. This identifies a gap in the literature for these constructs.

To understand the purpose of this capstone project, one must examine the social determinants of health in which diabetic patients endure and effects the accompany these areas. In addition, diabetic education provided by primary care physicians must be reviewed in order to access the outcomes at which patients and science are reporting successful implementation. By doing so, we will discover the gaps in education and advocate for the application of occupational therapy in the primary care setting focused on the treatment of type 2 diabetic patients' overall health, which may assist in decreasing type 2 diabetes and associated complications.

Supporting Theories and Frameworks

Type 2 diabetes is a chronic condition that can have a notable impact on a patient's overall well-being. While there is no cure for type 2 diabetes, the illness can be managed and controlled effectively by patients who utilize interventions and are being provided with education and strategies in order to combat this disorder. Primary care physicians are on the front line of care and have access to diabetic patients to provide care for and treat the illness. Physicians are the primary source of care for diabetic patients and should be providing adequate diabetic education. In order for change to occur, primary care physicians need to address specific barriers behind the limitation of providing options for diabetic education. Only then can diabetic patients engage in behavioral change to increase occupational performance.

The following topics are covered in the literature review: social determinants of health, limitations of diabetic education, benefits of diabetic education, barriers of diabetic patients, barriers of primary care physicians, primary care interventions and the benefits of occupational therapy utilized in primary care settings. Occupational therapists are trained professionals that can assist diabetic patients and create simple and reachable self-management goals associated with seven behaviors: healthy eating, being active, monitoring, medication management, problem solving and reducing risks (AOTA, 2011).

Theoretical Frameworks

Model of Occupational Empowerment

The occupational empowerment model describes how living in a disempowering environment can be associated with an individual's maladaptive habits and unhealthy lifestyle choices (Fisher & Hotchkiss, 2008). Disempowering environments include those with unfavorable circumstances such as poverty, physical abuse, violence, and limited social support. In particular, primary care physicians have identified limited social support as a challenge to providing in-depth diabetic education to patients. They have also identified the limited time allocated to effectively treat patients as challenging. Individuals that live in disempowering environments may experience homelessness, limited educational opportunities, and occupational isolation, which can lead to reinforced helplessness, resulting in environmental barriers (Fisher & Hotchkiss, 2008). The model facilitates empowering groups, power projects, social support, and client involvement. Primary care physicians can empower diabetic patients by providing them with educational strategies in order to facilitate change. Occupational therapists can address needs in three areas environment, occupation, and empowerment by promoting positive occupations. The primary goal is to enhance self-efficacy and increase healthy behaviors. This model can easily be applied to educate diabetic patients and foster change.

Empowerment is a stimulus for advocacy and promotes positive change, which can increase health promotion in community-based programs (Sraffa & Reitz, 2014). The utilization of the empowerment model within this population would provide clients education on eating and healthy habits and behaviors. Through diabetic education, clients can be empowered to implement these strategies and change their own lives. An occupational therapist's intention is to empower individuals to achieve their desired outcomes. In regard to providing diabetic education, clinicians will assist in identifying environmental and social factors that restrict

occupational performance. Thereafter, areas of need will be identified and educational resources will be provided in order to empower this underserved population to increase their overall health.

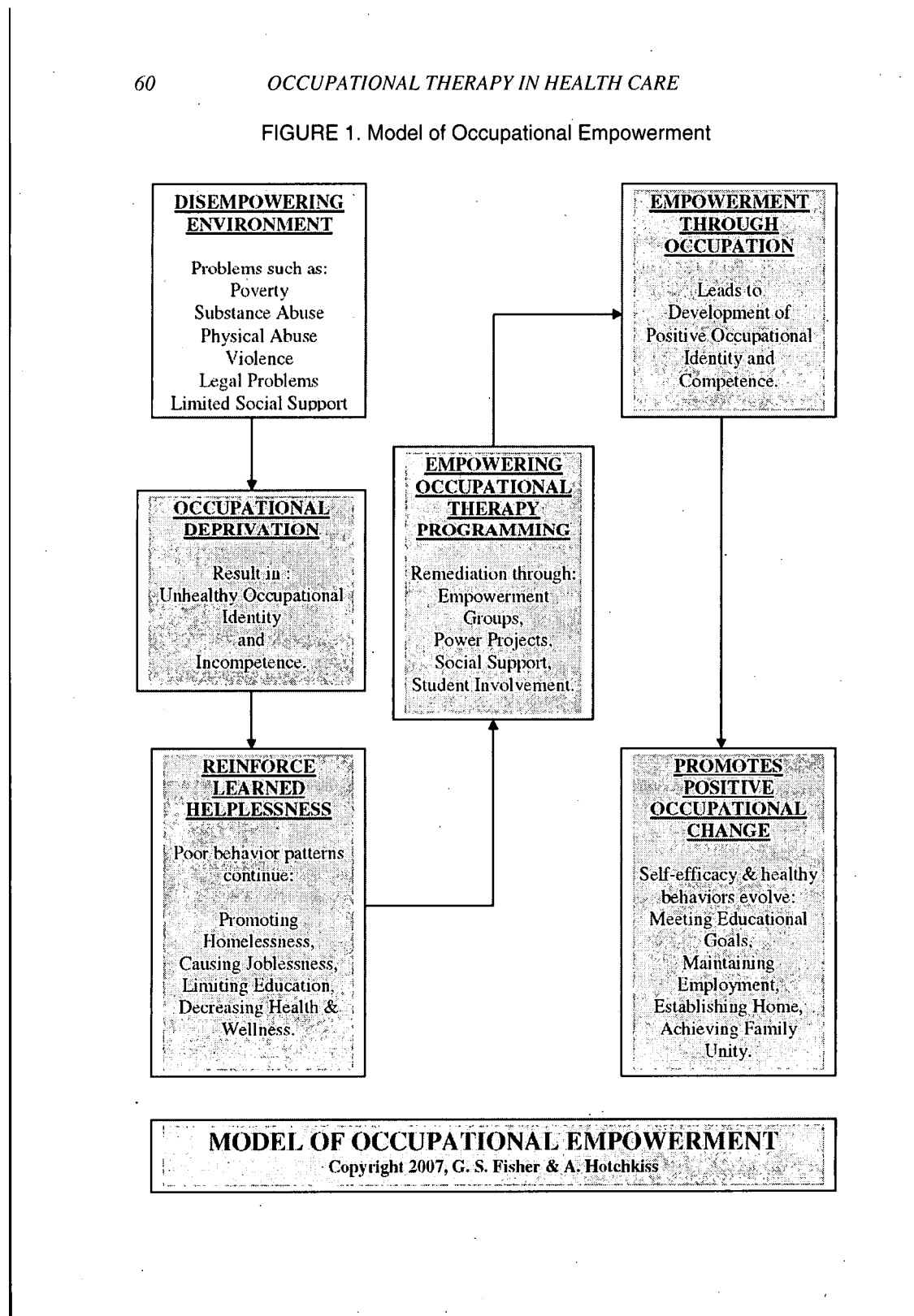
Cheng et al. (2018) conducted a study to evaluate the effectiveness of a patient-centered empowerment-based program with patients with poorly controlled diabetes. There were 242 participants in the study, which included an intervention group that received a six-week patient-centered, empowerment-based program and a control group that received basic health classes. A major focus of this study was on self-management behaviors in regard to healthy diet and identifying meaningful goals. The researchers found that the interventions did not change patients' glucose level but had a significant impact on diet management and glucose monitoring. This study highlights the benefits of diabetic patient education.

Ebrahimi et al. (2015) performed a randomized controlled experiment to assess the effectiveness of the empowerment model. The intervention group received empowerment training and the control group received conventional training. The training was performed for eight weeks. Education based on the empowerment approach was performed on diabetic patients in the experimental group. The findings indicated that there was a significant amount of effectiveness in the use of the empowerment approach, which may lead to improving patients' health.

The empowerment model has been identified as an effective model for the application of health education. Wallerstein and Bernstein (1988) conducted a study to better understand the empowerment process coupled with the Freirean approach (listening, dialogue, and action) to health education. This study explored a review of literature explaining how powerlessness can be linked to disease, the facilitation of empowerment and increased health, and the utilization of Freire's model compared to traditional health models in regard to substance abuse. The researchers allowed participants to team up with other health professionals to explore the value of student experiences focused on substance abuse, critical thinking, and conversations about the root causes that motivated students to foster change in response to their problems. The empowerment model is a continuous model that can be applied to help patients create change. This model can be utilized for diabetic patients, who need to be empowered to become active participants in their own treatment plan and acknowledge their role in applying diabetic education to their overall well-being.

Figure 1

Model of Occupational Empowerment



Source: Fisher and Hotchkiss (2008).

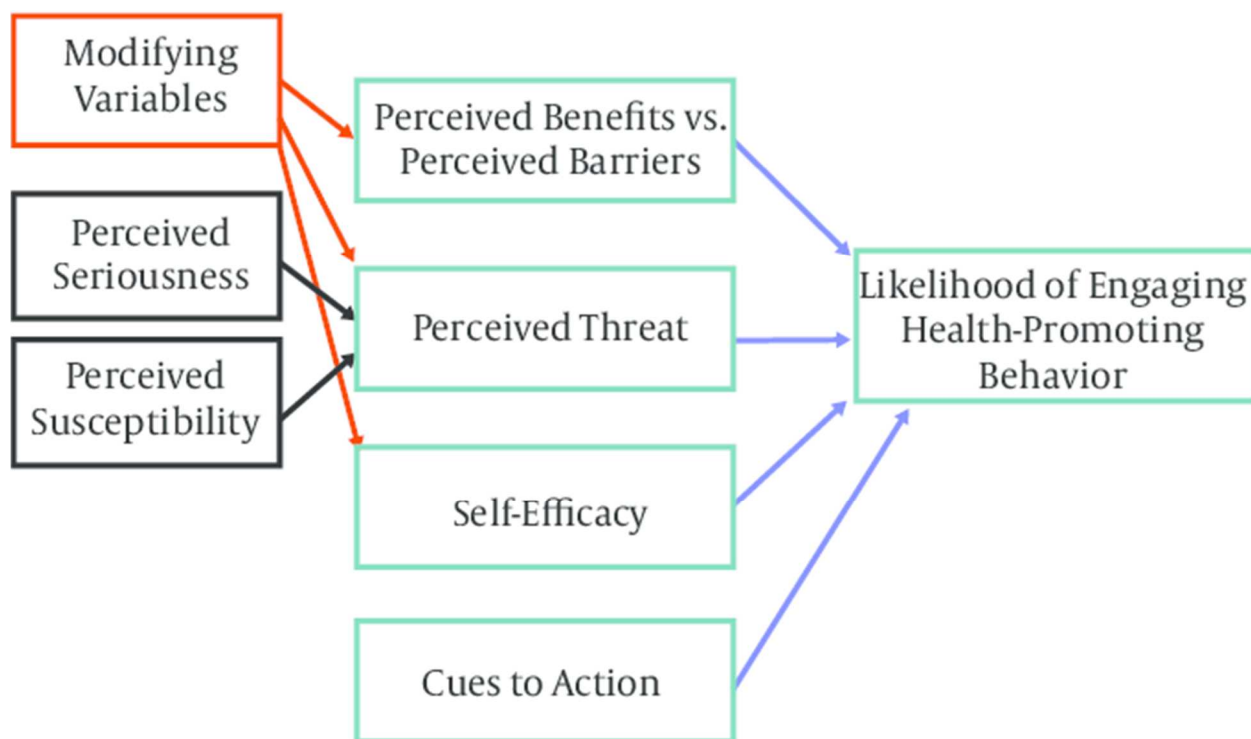
Health Belief Model

The health belief model describes the relationships between a person’s beliefs about health and his or her health-specific behaviors (Rosenstock, 1974). The model addresses the perceptions of the individual, focusing on perceived susceptibility, severity benefits, and barriers, as well as cues to action (i.e., any event that leads to a change in behavior). The health belief

model has been identified as one of the most effective models utilized for health education (Shabby, et.al, 2017). For diabetic education to be successful, the patient must recognize that the benefits outweigh the barriers to maximize optimal performance. Thus, this model can be utilized in diabetic populations to show that the importance of education is in direct alignment with accessing consequences of health issues, identifying barriers, demonstrating action through skill development, activating support, and building self-efficacy.

The health belief model has been applied successfully in the treatment of patients diagnosed with type 2 diabetes. Mohammedi et al. (2018) conducted a randomized controlled study to identify the impact of self-efficacy education with type 2 diabetic patients while utilizing the health belief model. There were 240 patients in the study, evenly divided between the intervention and control groups. The findings indicated that patients in the intervention group had significantly lower A1c levels and exhibited increased knowledge and health beliefs compared to those in the control group. The health belief model is a complementary model that fits perfectly with concept of promoting patient education for diabetic patients. Jillian et al. (2014) conducted a study to evaluate self-management educational programs to promote intervention and efficiency among type 2 diabetic patients using the health belief model. There were 120 patients who participated in this study, with 60 in the control group and 60 receiving the intervention, which included education on diabetic foot care, type 2 diabetes-related complications, and regular physical activity. The researchers found that patients that underwent the educational program showed increased self-efficacy, indicating that self-management programs may be effective for individuals with type 2 diabetes.

This model suggests that patients' beliefs about health issues and their perceived actions and barriers can explain the reasoning behind patients' engagement or lack of engagement in promoting positive health-related behaviors. In another study, Shabby et al. (2017) studied the effectiveness of educational interventions incorporating the health belief model for type 2 diabetics. The interventions included several sessions, including education on diabetes symptoms and complications, self-care aspects of diabetes, healthy diet and nutrition habits, and blood sugar testing. The results indicate that educating patients on diabetic self-care behaviors can lead to increased self-efficacy, which may lead to increased diabetic care. The health belief model, when applied to diabetic education, assists in facilitating an increase in the overall health and well-being of type 2 diabetic patients.

Figure 2*The Health Belief Model*

Note. Adapted from the Health Belief Model (Rosenstock, 1974). Reprinted from Dadgarmoghaddam, Khajedaluae and Kadem-Rezaiyan (2016).

Transtheoretical Model of Change

While the health belief model can be applied to facilitate diabetic patients' health education, the transtheoretical model of change can provide insight into the necessary behavior changes that primary care physicians require in order to facilitate change. Scaffa and Reitz (2014) identified the Transtheoretical Model of Health Behavior Change (TMHBC) as an effective health education (promotion) model, especially when the individual is receptive to change. The transtheoretical model of change is a biopsychological model that is used to conceptualize the process of internal change. This model assesses an individual's readiness to act on a new behavior and provides strategies to assist the individual to achieve a positive behavior change. The transtheoretical model includes six stages, which can be applied to the context of diabetic education as follows (also see Figure 3):

1. The first stage, *precontemplation*, refers to a primary care physician's inability to recognize that there is a problem with the process of providing diabetic education and limited interest in changing behavior.

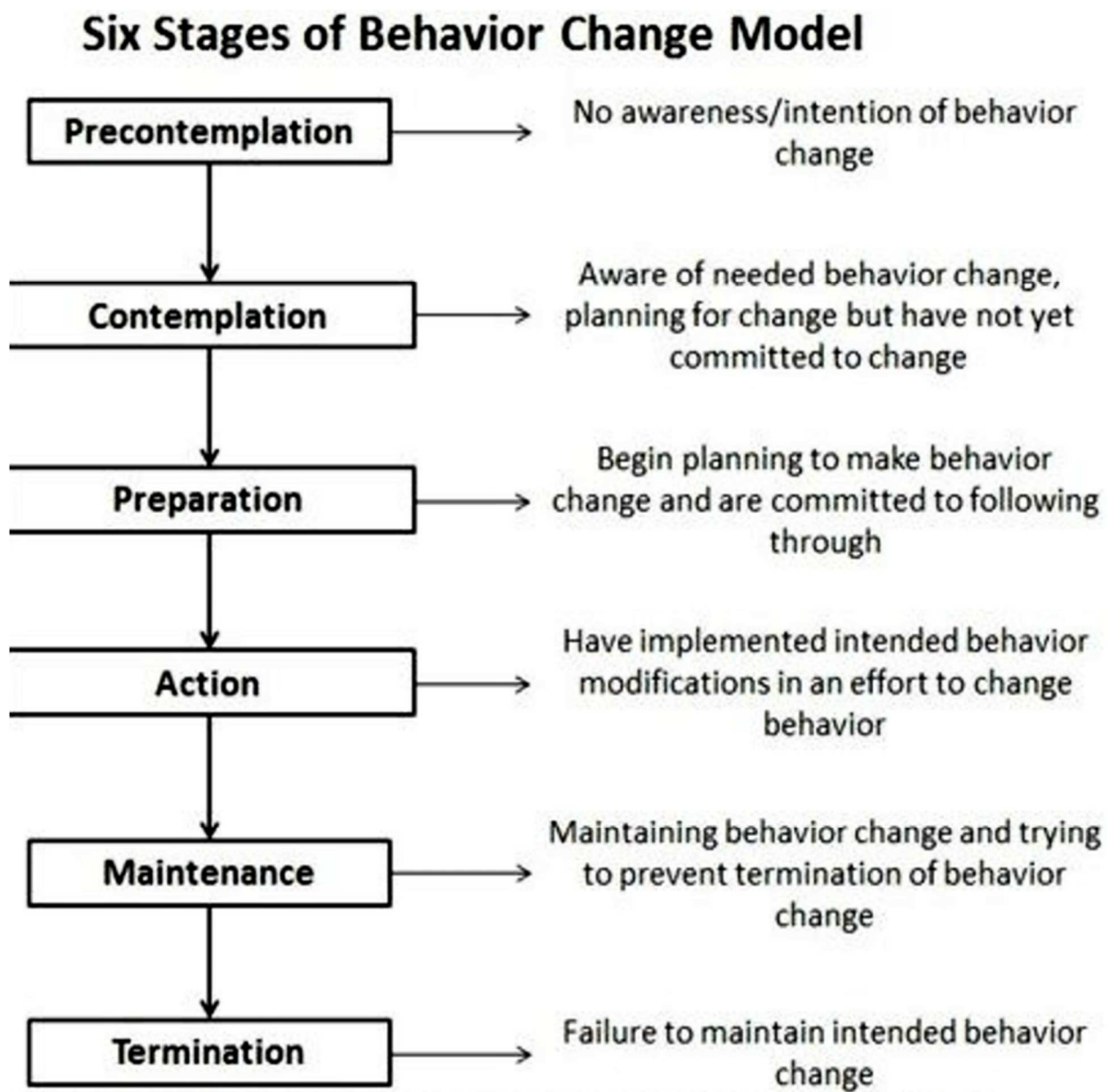
2. The second stage, *contemplation*, demonstrates a primary care physician's interest in recognizing the problem (limited diabetic education) and motivation to remedy the situation. This stage offers hope and creates opportunities to embrace change and improve patient performance outcomes.
3. The third stage, *preparation*, signals plans for change with a focus on obtaining resources supporting the change behavior. The primary care physician may plan to obtain outside support from an interdisciplinary team member such as an occupational therapist to provide education to diabetic patients.
4. The fourth stage, *action*, is considered a complex stage, since the behavior is changing and the environment is supporting the changed behavior. The diabetic program reflects action by providing clients with diabetic education and strategies to facilitate change.
5. The fifth stage, *maintenance*, is considered a long-term investment with sustained behavioral and lifestyle changes. The diabetic patients may be able to manage their illness, which may lead to increased quality of life.
6. In the sixth stage, *relapse*, the primary care physician reverts to providing education in the same manner as in the beginning of the first stage.

This behavioral change model provides an integrative approach to diabetic education.

The model examines barriers perceived by primary care physicians and behavior changes needed in order to address the lack in patient education. This model fits with the explanation of behavior change needed to assist in addressing patient outcomes.

Figure 3

The Transtheoretical Model of Behavior Change



Note. Transtheoretical Model stages of behavior change. Note. Adapted from: Prochaska J, DiClemente C. Stages and processes of selfchange of smoking: toward an integrative model of change. *J Consult Clin Psychol.* 1983;51(3):390-5. Reprinted from Wright, Velicer, and Prochaska (2019).

Freire Model

Freire’s liberation model is an alternative model of education that supports human liberation and makes people subjects of their own learning, in which education is embedded in experiences, resulting in individuals developing critical thinking skills (Freire, 1972). This model facilitates social action by encouraging cultural groups to come together and listen to one another, promoting collective ideas to create change and develop strategies for additional actions (Minkler, 2012). In addition, sharing life experiences creates opportunities to identify individual

struggles and develop collective actions to facilitate change (Martinson & Su, 2012). This model may be used to facilitate behavior change and change within underserved populations.

The Freire model provides a framework for improving health literacy and awareness among underserved communities and raises consciousness within communities in regard to social and economic factors that affect health status (Dearfield et al., 2017). The Freire model can be applied to primary care physicians providing educational resources to diabetic patients. This may facilitate health literacy, which in turn has been linked to successful health outcomes (Dearfield et al., 2017).

Meetoo and Gopaul (2005) conducted research to investigate the correlation between empowerment and Freire's liberation approach in patients with type 2 diabetes. An important concept that was determined was the decision-making process and final determination of what is right and is the responsibility of the patient. The researchers found that in order to be actively involved in their own care, they must be equipped with the knowledge and information needed for effective self-management of diabetes (Meetoo & Gopaul, 2005). Occupational therapists can play a strong role in diabetic education; the development of this program will give people the resources to take control of their own disorder and maximize their overall occupational performance.

Kawa Model

The application of a holistic approach to the occupational therapy role in the process of disease management will be explored through the Kawa model (Iwama et al., 2006), which redefines occupation from an East Asian cultural perspective and realigns the purpose of occupational therapy to fit the parallel of importance of life and occupation with a focus on East Asian values and beliefs. The model uses nature as a metaphor for one's life, which is considered to be complex and flowing through time and space like a river (Iwama et al., 2006).

The word *kawa* means water in Japanese, and the river in this model is used to depict the journey of one's life (Iwama et al., 2006). The concepts of this model include water, river walls, rocks, driftwood, and spaces. The water aspect represents the energy in an individual. When the flow is weak, this may indicate the person is unhealthy or not living harmoniously with the environment. When the water stops flowing, this represents the end of life (Iwama et al., 2006). The river walls represent the client's environment, with a focus on social and physical contexts. The river walls constitute mainly those who have a direct relationship with the client. The bottom

of the river represents meaningful relationships with family members and loved ones (Iwama et al., 2006).

When relationships are harmonious, they can make the flow of the river smooth. The flow of water can increase in difficult circumstances and may displace rocks in the riverbed, which will create new courses for the river to flow (Iwama et al., 2006). The flow of the river may decrease in volume, which may evoke a negative effect on the other elements that take up space in the channel (Iwama et al., 2006).

Rocks are impediments to one's flow (Iwama et al., 2006). These are life circumstances that are problematic and difficult to remove from a person's life. Large rocks can impede the flow and may represent congenital conditions. Furthermore, rocks that appear suddenly may represent an acute condition or illness such as diabetes (Iwama et al., 2006).

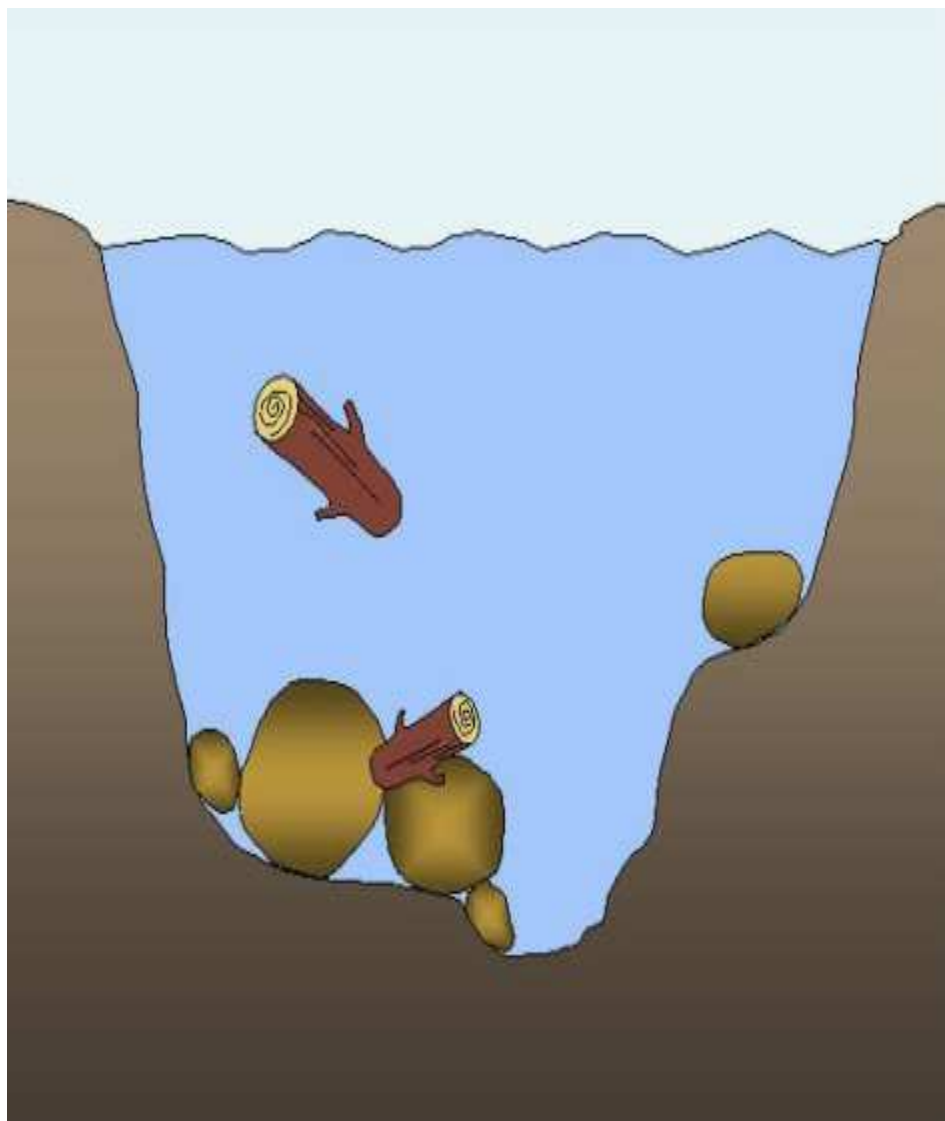
Driftwood represents personal attributes and resources, including values, character, personality, special circumstances, and experiences. When driftwood settles in among rocks and rivers, it may become obstructive. However, if it collides with the same structures, it may push obstructions out of the way (Iwama et al., 2006). Spaces are the channels in which the client's life flows, representing occupation. These spaces help the therapists comprehend the client's context along with other elements of the river (Iwama et al., 2006). When water moves through spaces and erodes rocks over time, it transforms them into larger conduits for the flow of the river that is, of life (Iwama et al., 2006).

The Kawa model brings cultural views and nature into a socio-cultural context that is used in Eastern as well as Western occupational therapy practice. The Kawa model will complement the proposed diabetes education training by allowing patients to identify barriers and utilize strategies in order to maximize their overall well and well-being. In addition, the application of the Kawa model will identify what the specific barriers and obstacles are that clients face and allow the teacher to address customized strategies in order for patients to integrate these strategies into their own lives. The construct of drawing may be therapeutic and allow a real-world model for clients to recognize barriers and develop strategies to conquer these barriers.

The Kawa model has been applied to identify more structure about diabetic education and identify holistic perspectives in the community (Huang & Wu, 2016). This model can be applied to both diabetic patients and primary care physicians. The model can identify viewed challenges

supports and barriers of patients and physicians alike using the schematic below, which may in turn facilitate change.

Figure 5
Kawa Model



Note. This depicts rocks, and trees showing the barriers that individuals can identify in their own life. Reprinted from individual.utoronto.ca

Summary

Theories and frameworks are essential to guide occupational therapy practice. Evidence suggests that behavioral change models give clinicians guidance and greater understanding when targeting specific behaviors and developing interventions specific to the knowledge and education of patients (McSharry et al., 2019), thus enabling them to guide diabetic care. The empowerment model suggests that type 2 diabetic patients need to feel a sense of empowerment in order to be motivated to be active participants in their own care. The health belief model addresses the idea that type 2 diabetic patients will not facilitate change unless they believe they are at risk of comorbidities and complications of type 2 diabetes. Freire's model recommends

making type 2 diabetic patients subjects of their own learning, which can lead to positive actions. The transtheoretical model highlights the notion that primary care physicians need to believe there is a problem in the current delivery of education to diabetic patients. The Kawa model will assist diabetic patient to identify and develop strategies to treat type 2 diabetes and include them into their daily lives.

When one understands the theories that guide practice, one must also become familiar with the environmental influences that can affect diabetic patients, which may impact the level of care they receive. The social determinants of health for diabetic patients are outlined below.

Social Determinants of Health and Diabetes

Social determinants of health are conditions within the environment that people are born within (Healthypeople.gov, 2020). Such conditions include social, physical and economic conditions in various settings including neighborhoods, workplace, church and school settings (Healthypeople.gov, 2020). Examples of social determinants include daily resources such as safe housing, job opportunities, education, transportation, safety, social support, access to technology, race, social norms and attitudes that affect individuals (Healthypeople.gov, 2020). Evidence suggests that these determinants directly affect a person's ability to live a healthy life.

Social determinants of health, particularly including socioeconomic status and education level, may increase the prevalence of type 2 diabetes. Silva-Tenneco et al. (2020) conducted a study in Mexico City to determine the role of such social determinants of health in patients diagnosed with type 2 diabetes. The researchers conducted a pretest, a 5-month intervention, and a follow-up test. The participants included 498 type 2 diabetics from 32 outpatient facilities throughout Mexico City. The Diabetes Empowerment and Improvement of Care intervention was utilized, which included individual and group sessions, with a case management team focusing on diabetes self-management and general diabetic education. Participants were educated on general knowledge of diabetes, self-identification of diabetic goals, self-care strategies, and reduction of risk of diabetic complications. The researchers found that a statistically significant relationship between diabetic management and self-care activities. These are two areas in which occupational therapy can play a role in diabetic treatment. Social determinants such as poverty, health literacy, lack of resources, and obesity may directly lead to

the prevalence of diabetes. For this reason, diabetic patients should receive adequate diabetic education.

Limited Diabetic Patient Education

Many diabetic patients have reported a lack of diabetic patient education being provided in the primary care setting in order to manage the disorder (Coonrod et al., 1994). Research indicates that diabetic education may improve the overall self-management of the condition among patients diagnosed with type 2 diabetes. Diabetic patient education and self-management strategies are the pillars of effective diabetic care (Hadden et. al, 2020). The national standards for diabetes self-management support education on self-care behaviors and problem-solving strategies provided to diabetic patients to increase patient outcomes. Research supports the use of a multidisciplinary approach being most effective when providing diabetic education to improve patient outcomes (Funnell et. al, 2012). Diabetic education is a major factor in the success of type 2 diabetes management.

Cost Effectiveness

Boren et al. (2009) conducted a literature review to evaluate the costs and benefits of diabetic education. The researchers examined 26 studies that focused on diabetic self-management training and diabetic education strategies. The results indicated that diabetic education has a direct correlation with overall cost reduction and increased positive outcomes for diabetic patients. According to Brownson et al. (2009), diabetic intervention programs focusing on lifestyle modifications reduce societal cost and diabetic complications. Research supports the cost effectiveness of health literacy education programs focused on increased positive outcomes for diabetic patients (Saifulsyahira et al., 2018). Evidence suggests that diabetic education may empower patients to manage their own illness and thus serve as a cost-effective strategy to decrease the cost burden on society and increase patients' overall well-being. Occupational therapists are experts at fostering behavior change through education and training for patients with diabetes.

Diabetic Education and Increased Outcomes

Gicciardi et al. (2020) conducted a study to evaluate the impact that diabetic education teams have on diabetic patients in primary care settings. There were 771 total participants, with 487 participants attending appointments with diabetic education teams and 284 patients in the control group. The interventions included self-management education, coaching and timely

treatment. The researchers reported that a significant portion of the target group showed reduced overall A1c levels, suggesting that diabetic educational teams are effective. Findings from this study lend support to the effectiveness of diabetic education and increasing patient outcomes.

Diabetic education and increasing awareness about type 2 diabetes have been found to be effective in making a positive impact on diabetic patients. Nazar et al.'s (2016) systematic review examined diabetic education programs in the United Kingdom. The results indicated that in-depth diabetic education and knowledge in the early stages of the illness can limit patients' chances of developing complications and may decrease morbidity. Also, the findings indicated that educating diabetic patients played a key role in patients' willingness to assist in their own diabetic care in order to effectively manage their diabetes. Research demonstrates that diabetic education can have a significant impact on managing diabetes.

Vandenbosch et al. (2018) conducted a study to capture the influence of health literacy and its connection with diabetic self-management education for patients diagnosed with type 2 diabetes. The study participants included 366 diabetic patients from nine different countries, who completed a questionnaire that measured self-management behaviors, general health and well-being, and coping. The researchers found that participants enrolled in a diabetic education programs exhibited increased positive outcomes compared to those not enrolled in a diabetic education program. Thus, maximizing diabetic education can lead to positive outcomes for diabetic patients.

Diabetic Barriers for Patients

Lack of Healthy Resources

Research indicates that underserved populations have limited access to food sources, which may lead to an increase in diabetes within these populations. Breland et al. (2013) conducted a study to determine common aspects of food preparation, food sources, and meal planning in low-income communities with patients that have type 2 diabetes. They found that the living environment severely limited the participants' access to healthy food options. Participants identified cost, quality, and availability as the main barriers to maintaining a healthy diet. The primary care practice is located in an underserved area with limited nutritional resources surrounding the area. Diabetic education on nutrition and diet may assist patients in the self-management of this chronic illness.

Obesity

Obesity is associated with type 2 diabetes, especially in low-income communities, where it is a major contributor to the diagnosis of diabetes within low-income communities.

Specifically, obesity is a factor associated with the high prevalence of diabetic cases in the present study's area of interest, Southeast Michigan, potentially making patients in this area more susceptible to a diagnosis of type 2 diabetes than those living in surrounding communities. For this reason, patient education on nutrition and healthy eating needs to be provided. Emphasis on diet and nutrition is important, because patients that are obese need to receive education on the importance of exercise and healthy meal planning.

Ahn et al. (2018) conducted a study to examine the effects of a behavioral intervention with various components with participants that were diabetic, obese, and low-income. The researchers utilized a longitude design with 87 participants in the treatment group and 62 participants in the control group. The participants received interventions including health coach visits and registered dietician and exercise consultations over a 12-month period. The results indicated reduced BMI, increased improvement in diabetic literacy, and reduced A1c levels. This study highlights the impact that primary care education-based behavioral programs can exhibit on patients with type 2 diabetes in underserved communities.

Poor Lifestyle Choices

According to the National Survey on Drug Use and Health (n.d.), 630,000 people reported having engaged in illicit drug use in Michigan and surrounding areas. In total, 25.4% of the population engaged in cigarette smoking and 25.6% engaged in alcohol consumption, which is higher than the national average for consumption (National Survey on Drug and Health, 2012). Zhu et al. (2017) performed a meta-analysis on smoking and diabetes and they found that smoking both actively and passively significantly increased an individual's chance of being diagnosed with type 2 diabetes. Individuals living in underserved communities show an increase in risky behaviors such as smoking, which may lead to diabetes. Specifically, increased participation in risky behaviors such as smoking may be attributed to the increased numbers of individuals with type 2 diabetes in Michigan. Constructs of health literacy may lead to an increase in diabetic education, which may facilitate better choices in underserved populations.

Limited Health Literacy

Fan et al. (2016) conducted a study to investigate the relationship between health literacy and diabetic medication management in underserved populations. The study participants consisted of 208 patients earning less than \$20,000 and having received limited formal education. The researchers found that limited health literacy was a prime factor in patients' unintentional non-adherence to medication consumption. Research suggests that limited health literacy may be a factor in the higher prevalence of type 2 diabetes in underserved populations.

Relatedly, increased health literacy may be important in the management of type 2 diabetes. Van der Heide et al. (2014) conducted a cross-sectional study to examine the direct association between health literacy and self-management behaviors that occur among the diabetic population. The 1,714 participants were above the age of 67 and had been previously diagnosed with diabetes. The data collection method consisted of questionnaires, Chew's Set of Brief Screening Questions to measure health literacy, and the Diabetic Knowledge Test. Self-management behaviors consisted of four variables: glucose self-control, self-reported glucose levels, physical activity, and A1c levels. The researchers found that patients with decreased health literacy scores also exhibited decreased scores on the Diabetic Knowledge Test, which correlated with patients that were less active and less likely to adhere to glucose self-reporting protocols.

Moreover, research suggests that higher literacy rates may have a direct influence on type 2 diabetic knowledge. Hahn et al. (2015) performed a study to investigate patient characteristics, health outcomes and health behaviors and survey the role of health literacy between Spanish and English-speaking adults with patients diagnosed with type 2 diabetes. The researchers examined dependent variables such as self-care, health status, and communication. The independent variables included sociodemographic information, health literacy, health beliefs, and self-efficacy. The researchers found that higher health literacy was associated with less social support and higher diabetic knowledge.

Primary Care Barriers and Effective Diabetic Treatment

There are numerous factors affecting primary care physicians and the treatment of type 2 diabetic patients. Messina et al. (2017) conducted a systematic review that focused on primary care physicians and the delivery of services to type 2 diabetic patients. The following themes were noted that focused on challenges perceived by primary care physicians associated with the

prevention of diabetes and education of type 2 diabetic patients: increased workload, lack of time, and lack of resources to effectively treat diabetic patients. The barriers identified provide insight into the reasons for the lack of diabetic education provide by primary care physicians.

Primary Care Shortage

Primary care physicians provide treatment for the general community and are the leaders in providing treatment to patients with chronic conditions. Currently, there are just over 46 primary care physicians per 100,000 individuals in the population (Center for Disease Control, 2020). Lakhan and Laird (2009) explored the reasons for this primary care shortage in America and discovered that lifestyle concerns, schedule, and income were directly correlated with the shortage of primary care physicians. Furthermore, this issue may foster a discussion regarding the potential need for professionals from other disciplines, such as occupational therapists, to be added to primary care offices to focus on providing diabetic education to type 2 diabetic patients.

Limited Time

The aforementioned shortage of primary care physicians may increase the time pressure placed on current providers in the treatment of patients with chronic illnesses. According to Davidson (2009), the limited time primary care physicians spend with diabetic patients limits their ability to facilitate successful outcomes focused on the treatment of diabetes. Yarnall et al. (2003) conducted a study to determine the amount of time required for a primary care physician to effectively treat a patient with a chronic condition while providing preventive services. The researchers found that physical annual time accounts for 1773 hours, of which only 7.4 hours were used to treat chronic illness, demonstrating the extreme time constraints with regard to the treatment of chronic conditions. Increased time pressure and heavy workload were directly associated with providers asking patients fewer questions and having less time to educate patients on positive lifestyle changes (Tsiga et al., 2013). In order to perform meaningful patient education, a significant amount of time must be spent with the patients to facilitate change in order for patients diagnosed with chronic illnesses such as type 2 diabetes to be successful. The identified time constraint demonstrates a need for an interdisciplinary approach to diabetic patient education. An interdisciplinary approach may help to overcome this barrier, since occupational therapists can be a valuable asset to a primary care physician's office for providing diabetic education to patients.

Low Literacy of Diabetic Patients

Low literacy is associated with decreased health outcomes and can increase healthcare costs. Lausen et al. (2018) aimed to explore the strategies that have been used to support patients' health literacy. The study demonstrated that evidence of limited health literacy creates an opportunity for primary care physicians to focus on increasing patients' health literacy and self-education regarding type 2 diabetes. This study calls to attention the vital role played by primary care physicians in the education of diabetic patients.

Lack of Patient Motivation

Primary care physicians have expressed that some patients exhibit a lack of motivation to facilitate change regarding the management of diabetes. Murphy et al. (2015) conducted a qualitative study to examine the experiences of care and motivation reported by diabetic patients. The interviewed participants in this study included 22 diabetic patients of low economic status. The primary issues identified included constraints or limited availability from the provider, lack of education or explanation of the illness, lack of education on self-management and lack of emotional support. These factors may directly affect the behavior of type 2 diabetic patients. Patient-centered education is key to the success of type 2 diabetes management, as patients may feel their health concerns need to be recognized as a priority of the physician in order to gain the motivation to change. Occupational therapists can assess personal factors that may be attributed to a decrease in motivation and identify habits and routines that may directly affect the negative behaviors affiliated with decreased motivation.

Primary Care Intervention

Evidence suggests that education on nutrition and exercise may be effective to address the needs of diabetic patients. Vermunt et al. (2011) conducted a study to determine the overall effect of activity prevention in high-risk individuals diagnosed with type 2 diabetes. Participants were randomly assigned to the intervention group (479) or the control group (446). The intervention was provided through one-hour meetings with trained dieticians and physiotherapists focusing on nutrition and physical activity. The control group received information related to diet and exercise. The results indicated that both groups showed moderate changes in their glucose levels, weight, and fiber intake. Occupational therapists can help with similar interventions, as they are experts in physical activity and task segmentation in the treatment of chronic conditions.

Evidence also suggests that education on diabetes and proper nutrition may decrease patients' glucose levels, which may be associated with increased quality of life. Chen et al. (2020) conducted a study to assess the impact of diabetic education on fasting glucose levels in a primary care clinic in China. The study included 958 participants in the intervention group and 978 in the control group. The intervention provided diabetic patients with health education (typical symptoms, basic diagnostic criteria, diabetes complications including decreased foot care and ulcers) and self-management strategies, with follow-up interviews and additional physical examinations. The intervention group also received information on medication usage and proper diet choices. Participants in the control group received education on health services and monthly testing of fasting glucose levels. The researchers found that the fasting glucose level in the intervention group decreased significantly as their diabetic knowledge score increased. In light of these findings, the application of occupational therapy in a primary care clinic may offer an effective collaboration for education on medication management and foot care strategies.

Occupational Therapy and Diabetic Care

Research suggests that occupational therapists can create opportunities to resolve barriers within the primary care setting. According to Halle et al. (2018), occupational therapists have addressed wellness and prevention programs in the primary care setting. Primary areas that create obstacles to the field include reimbursement and an unclear vision about the added value of occupational therapy in the primary care setting. However, through collaborative partnership between the primary care physician and an occupational therapist, a client-centered diabetic programs can be successful for this population. Diabetes is a chronic condition that has ravaged underserved populations, but through education and focused strategies this disease can be managed accordingly.

Occupational therapy services can add a variety of potential benefits to interdisciplinary diabetic primary care. For example, Clark et al. (2015) conducted a study to evaluate the effectiveness of occupational therapy interventions for type 2 diabetic patients in a primary health clinic. The participants reported a significant increase in lifestyle choices and making changes in their routines. Occupational therapists are experts in the facilitation of positive routines and roles in order to highlight a diabetic patient's overall occupational performance.

Research suggests that occupational therapists working in primary care may enhance service delivery to diabetic patients. Pytak et al. (2019) conducted a study to examine the effectiveness of occupational therapy in the treatment of patients with diabetes in a primary care setting. The participants included 73 low-income, ethnically diverse diabetic patients. The participants were offered one-hour occupational therapy sessions that lasted 2-3 weeks and consisted of seven content modules directed at diabetic treatment. The occupational therapists collaborated with other primary care team members focusing on patient goals. The results indicated decreased A1c levels and increased knowledge of diabetic self-care.

Summary

As the literature review has shown, primary care physicians identified several barriers that contribute to the lack of education provided to diabetic patients. Primary barriers include lack of the necessary time and resources to provide diabetic patient education. These barriers directly affect the amount of education provided to diabetic patients. Additional barriers noted were lack of patient motivation and health literacy. Occupational therapists can help to overcome these barriers and play an integral role in the primary care setting by providing education on diabetic strategies that facilitate occupational performance. The American Occupational Association's Vision 2025 promotes the maximization of health through effective solutions in order to increase participation in everyday life. Occupational therapists can assist in the education of diabetic patients to actively increase the health and well-being of diabetic patients.

Chapter 3: Methods

Capstone Approach

There is overwhelming research evidence that the chronic illness of type 2 diabetes is difficult to manage in primary care offices. Several variables may cause diabetic patient education to be limited in the primary care area. Rushforth et al. (2016) conducted a qualitative systematic review to examine the strategies used by primary care physicians to treat type 2 diabetes. They examined a total of 32 studies that addressed specific type 2 diabetic care. The researchers found that several barriers have led to the limited amount of type 2 diabetic education being provided to type 2 diabetic patients by physicians, emphasizing limited time and inadequate resources as well as lack of knowledge and confidence in generalized skills.

Primary care physicians demonstrate several barriers in correlation with a lack of type 2 diabetic education being provided.

The literature review provided an insightful view into several barriers and lack of educational support type 2 diabetic patients face in the Wayne County Area. These findings indicate a need for further investigation into the different types of educational materials that are provided to type 2 diabetic patients within the primary care setting. Using a survey method, this capstone will address the following research question:

RQ: Are patients with type 2 diabetes provided with educational information to effectively treat their disorder and to determine if there is a potential patient educational role for occupational therapy?

To identify the obstacles faced by the type 2 diabetic patients and the education provided at the primary care level, a physician interview was performed followed by a patient diabetic educational survey these data collections were both performed on site at the primary care physician office. Data was collected from current type 2 diabetic patients in a primary care physician office based in Wayne County, Michigan. The collection of data focused on specific areas of type 2 diabetic education that has or has not been provided during their time as a patient at this medical practice. The data also focused on the level of familiarity that the primary care physician had about occupational therapists, and the role can be played in the primary care setting. The gaps identified by this research may be used to identify a potential role of occupational therapists within the interdisciplinary team in the primary care setting.

IRB Approval

Prior to conducting this study, the researcher applied for and received IRB approval for this research study and process from the Institutional Review Board (IRB) at Nova Southeastern University. The writer was approved for exempt status. Approval was received in January 2021.

Occupational Therapy Rationale

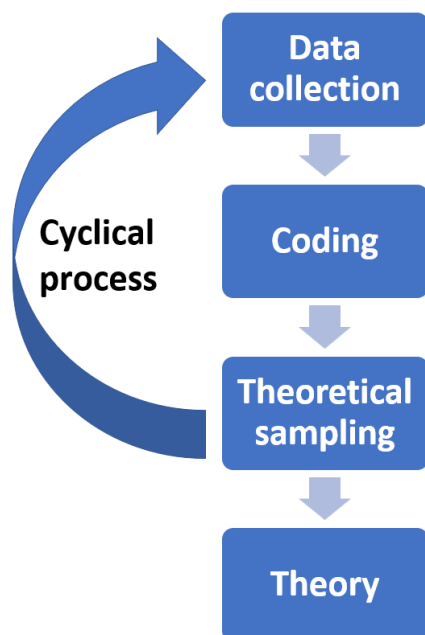
Occupational therapists are established experts in the treatment of diabetes. The pillars of the occupational therapy vision for 2025 promote effective evidence-based client-centered treatment and culturally responsive customized services in order to facilitate participation in everyday living (American Occupational Therapy Association, 2017). Occupational therapists are well prepared to participate and contribute to an interdisciplinary team addressing primary

care needs throughout the lifespan (AOTA, n.d.). According to Pyatak (2011), occupational therapists can facilitate interventions that include both educational and skill-building constructs in relation to personal and contextual factors that may increase and improve diabetic patients' overall health and well-being. Occupational therapist can provide education to diabetic patients that focuses on nutritional choices, meal preparation, foot care strategies, wound care, home modification strategies and establishing and maintaining a daily exercise routine to assist in facilitating a healthy life.

Health promotion and prevention are identified as occupational therapy intervention approaches in order to increase health and well-being (American Occupational Therapy Association, 2014). Occupational therapists understand the presence, absence, and limitation of specific body functions by assessing the client's engagement in occupations; this enables the therapist to create adaptations, modifications, and remediations to help foster occupations and maximize performance (American Occupational Therapy Association, 2014). Occupational therapists play three critical roles in health promotion and prevention, including promotion of healthy occupations among people with increased chronic health conditions, to incorporate occupation as an essential element of health promotion and to provide specific interventions to populations to foster increased occupational performance (Reitz et al., 2020). Occupational therapists are equipped to provide education for patients with chronic conditions.

Grounded Theory

Grounded theory is an approach to creating theory that focuses on data that is gathered and then analyzed (Glaser & Strauss, 1967). The theory that is produced must be solidified from concrete data (Glaser & Strauss, 1967). Grounded theory is a qualitative methodology that represents the connection between methods and comparative actions (Chun et al., 2019). Observations are a primary source of data for the constructs of grounded theory (Urquhart, 2012). Grounded theory is considered a dominant paradigm for social research utilizing qualitative data (Hughes & Jones, 2003). According to Stanley and Cheek (2003), grounded theory's main focus is on life situations where relationships, processes, and meanings require explication. The researcher will employ grounded theory for this study to identify whether primary care physicians are providing educational materials to diabetic patients.

Figure 4*Grounded Theory*

Note. This cycle shows the process from data collection to theory identifying the grounded theory process. Reprinted from maxqda.com (n.d.).

Setting

A primary care clinic in Wayne County, Michigan, was chosen as the setting for this pilot study. The location is a stand-alone building located off a busy intersection and is tucked away in a neighborhood. This clinic has been operating for more than 15 years and provides services five days per week to patients with diabetes as well as patients with other conditions. This office has one primary care physician, one medical assistant, one medical biller and one office manager. Based on the physician interview, more than 75% of the clinic's patients are diagnosed with type 2 diabetes.

Wayne County's population is estimated at 1,749,343, and approximately 12.4% of the population is diagnosed with type 2 diabetes. The average income is approximately \$47,301, lower than other areas in the state of Michigan, and the average education level is lower as well, with 86.5% of people reporting having graduated from high school and 23.9% of people reporting having attained a Bachelor's degree or higher (midiabetesprevention.org). This information is relevant with regard to the association of low income with type 2 diabetes.

The prevalence of type 2 diabetes in Wayne County may be caused by a lack of education on diet and nutrition, lack of education on medication management, unhealthy lifestyle routines and choices, and lack of availability of exercise programs. Furthermore, the primary care office in this study does not have a structured diabetic educational program for patients with this

disorder. According to the physician, time is a major factor in the lack of educational opportunities provided to patients.

Physician Interview

Prior to developing the diabetic survey, an open-ended physician interview was conducted by the researcher onsite at the office to gather information from the primary care physician. The primary care physician was the only interviewee, and no other office staff were interviewed or in the room at the time of the evaluation. The interview questions focused on the following points:

- What percentage of diabetic patients currently being treated in the office?
- What challenges and barriers faced by the physician when treating diabetic patients?
- What are educational strategies that the physician is currently providing to patients to prevent and combat diabetes?
- Thoughts and identification of the possibility of changing the way diabetic education is provided within the office.
- What the primary care physician's knowledge of occupational therapy and role that can be played in the primary care setting.

The interview data provided insight to the researcher in regard to the current challenges faced by the primary care physician. These challenges may have led to decreased time to perform in-depth diabetic patient education and provide educational materials to diabetic patients. Concern about the lack of resources provided to primary care physicians in order to treat patients was also mentioned. Finally, the physician acknowledged limited knowledge of occupational therapy in the primary care setting. Following the completion of the interview, the survey component was developed and provided to individual diabetic patients at the primary care clinic.

Patient Survey

The researcher created the survey based upon the information obtained from the physician interview and the literature review, with the purpose of determining whether educational needs of diabetic patients are being addressed in the primary care setting. The survey will not be validated but is part of this initial pilot study to determine the potential role for occupational therapy in the primary care setting. After receiving informed consent and written approval, the survey will be distributed to participants by the researcher. The survey does not

include identifiable patient information. The researcher did not include sensitive questions in the survey; however, a participant can choose not to answer these questions after viewing them if desired. The questions covered several barriers in education that diabetic patients may experience, including a lack of education related to nutrition, medication management, exercise, meal preparation, skin protection and wounds.

The survey consisted of 9 closed-ended questions. Question 1 identified the participant's gender, and the remaining questions had yes/no answers, as follows:

- 1) Are you male or female?
- 2) Are you over the age of 50?
- 3) Have you been provided with information on healthy eating and nutrition for diabetes?
- 4) Have you been educated on meal preparation?
- 5) Have you been provided with a home exercise program?
- 6) Have you received medication management training in order to manage your medications safely?
- 7) Have you been educated on skin protection strategies to prevent diabetic complications?
- 8) Have you been educated on foot care strategies to prevent cuts and wounds?
- 9) Have you been educated on home modification strategies to prevent falls within the home?

Design

This study is an observational prospective survey research pilot study of diabetic patients in the primary care setting. The variable in the study is provider patient education—specifically, the amount of patient education provided by the primary care physician to diabetic patients. Conducting a pilot study can increase the chances of success in diabetic programs (Van Teijlingen & Hundley, 2001). Evidence shows that pilot studies can provide highly sought-after insight for other researchers as well as many other functions (Van Teijlingen & Hundley, 2001). There is a gap in the literature regarding the potential role that occupational therapists can play in providing patient education to type 2 diabetic patients within the primary care setting and the potential role that occupational therapists may play in the primary care area. The pilot study approach is an effective way to address the research question.

Benefits of Surveys

According to Depoy and Gritlin (2019), surveys are used to measure the characteristics of a certain population. There are many advantages to gathering data utilizing surveys. For example, the researcher can gather a large sum of data within a minimal period of time; several variables can be measured by a single instrument; and statistical manipulation during the analytical phase can create multiple data sets. For this reason, the researcher chose to develop a survey in order to identify the gaps in diabetic education.

Benefits of Interviews

Open-ended questions allow respondents to provide information such as feelings and attitudes, which may foster a better understanding of the subject area. According to Allen (2017), the use of open-ended questions allows the researcher to take a holistic approach to specific areas that are being studied, which may lead to the responder providing more opinions, thus potentially giving the researcher a clearer perspective on the research project. In this case, the researcher focused on gathering data that would be effective in the identification of barriers that primary care physicians experience. The researcher chose this method to interview the physician in order to apply a holistic approach to the data collection method.

Participants

This study uses a convenience sampling method, with the participants comprising the first 30 adult type 2 diabetic patients from the clinic that agreed to participate in the study. Each participant asked to participate in the study had a scheduled monthly appointment. Informed consent was obtained from each participant prior to data collection. The inclusion criteria for participation in the study were as follows. To take part in the study, participants were required to: 1) be aged 50 or above; 2) have been diagnosed with type 2 diabetes; 3) be a current patient of the focal primary care clinic; and 4) agree to the invitation to participate in the study. Participants who declined to participate in the survey were not included, and the researcher continued to collect data and informed consent until 30 participants were obtained.

The researcher performed an in-person staff training with an office employee to ensure that proper procedures were performed when handling patient charts in order to identify potential participants. After the office employee identified potential participants, the researcher approached the participants in the waiting room to invite them to participate in the study. Patients that agreed to participate in the study completed their scheduled doctor's appointment and then

were led into a private room where they were asked to complete the survey provided on a table. After completion, the participants were asked to deposit the survey into a collection box on the same table, without including any identifying information on the survey. Even staff members would be unable to identify who performed the survey, as the survey does not include any identifying patient information.

Recruitment and Procedures

Prior to the data collection, the researcher performed an in-person staff training with one front desk intake staff member to review the set criteria for the potential inclusion of type 2 diabetic patients to ensure patient confidentiality and the inclusion criteria were protected. The researcher also trained the office employee to ensure that proper procedures were performed when handling patient charts in order to identify potential survey participants. The office staff member performed a chart review to identify whether a scheduled patient met the first two inclusion criteria. The office staff member then placed the patient chart in the file.

The staff member notified the researcher if there was a patient in the waiting room who qualified for the study. All information gathered by the researcher was anonymous and did not include any contact information. The researcher then approached the patient who qualified for the survey face-to-face in the patient waiting room to ask if the patient would be interested in answering a 3-5-minute survey on diabetic education. The researcher informed the participant that participation in this survey was completely voluntary. Upon agreement, the researcher directed the patient to a private room and explained the purpose of the survey, how the survey would be conducted, and how the information will be used in the future.

The participant were asked if they had any questions regarding the survey. The researcher provided a copy of the informed consent document to each participant for review. If the participant agreed, they signed the consent document in the private room prior to the administration of the survey and then remained in the private room to complete the survey. Upon completion of the survey, the participant then placed the completed survey through a slot at the top of a designated locked box. The researcher could not access any of the anonymous surveys until all 30 surveys were completed. Upon completion of the survey, the participant was led from the private room back to the waiting room area.

Confidentiality to Prevent Loss of Data

The survey was kept locked in a file cabinet in a locked office with one key in possession of the researcher. The survey was kept separate from any medical records with identifiable data. The deidentified data was placed in Excel computer spreadsheets kept on a password-protected computer in a locked office. The researcher did not have any identifiable patient information from the charts, to which the researcher does not have access. The data will be destroyed after 12 months.

Data Collection

The data were collected by the researcher over a period of five days in the primary care clinic. Of the 43 participants that met the inclusion criteria and were invited to participate in the study, 13 declined and 30 agreed to take part in the research study.

Data Analysis

The writer will perform a descriptive analysis. The information was placed on spreadsheets in Excel which will only be accessible to the researcher. Data was analyzed, and the researcher tabulated the number of yes and no answers, and the answers for the questions will be graphed using bar graphs. The researcher performed a cross-tabulation to display the percentage of yes's and no's for the survey. Gender percentage differences in yes/no responses will also be identified. The researcher determined the percentage of the complete diabetic education being provided and will look at each yes and no question to determine if that educational element could be provided by an occupational therapist.

If the data analysis shows that there is any question for which where there are 5 or more "no" responses, this may indicate a potential role for occupational therapists in the education of diabetic patients. The purpose of the data analysis is to identify gaps in education provided to diabetic patients and establish a need for occupational therapy.

Summary

The researcher conducted an open-ended interview with only one primary care physician. The researcher provided a patient survey to 30 type 2 diabetic patients. There are several advantages to conducting open-ended interviews with individuals, including the fact that people may find them less threatening and thus not limit their responses, which may be useful for the researcher to gain an understanding of the topic being explored.

Chapter 4: Results and Findings

The diabetic survey was approved by the Institutional Review Board at Nova Southeastern University's Dr. Pallavi Patel College of Health Care Sciences. The quantitative in-person survey was conducted to assess the patients' perspective on diabetic education that has been provided in the primary care setting. The quantitative data will be analyzed and placed on a spreadsheet in order to identify the themes in diabetic education provided to diabetic patients in the primary care setting.

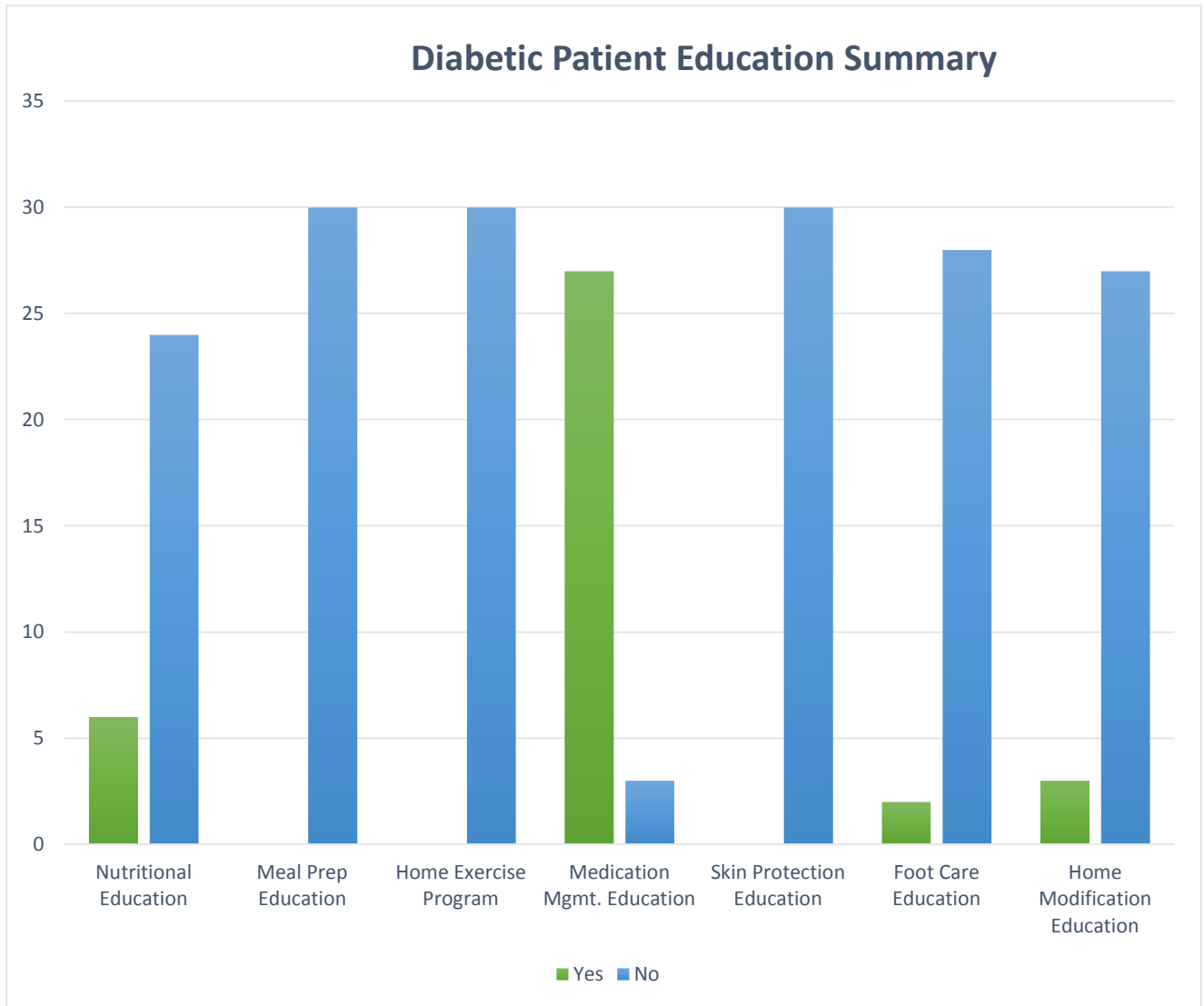
Profile of Participants

All participants were recruited from the primary care physician's office, lived in Wayne County, and were active patients in the primary care physician office. Participants age 50 and above with a diagnosis of type 2 diabetes were asked to participate in the study. The survey questionnaire collection period lasted for five days, which was the time period required to reach the allotted number of 30 participants. In total, 43 patients were asked to participate in the survey and 13 declined.

Quantitative Data

Figure 5

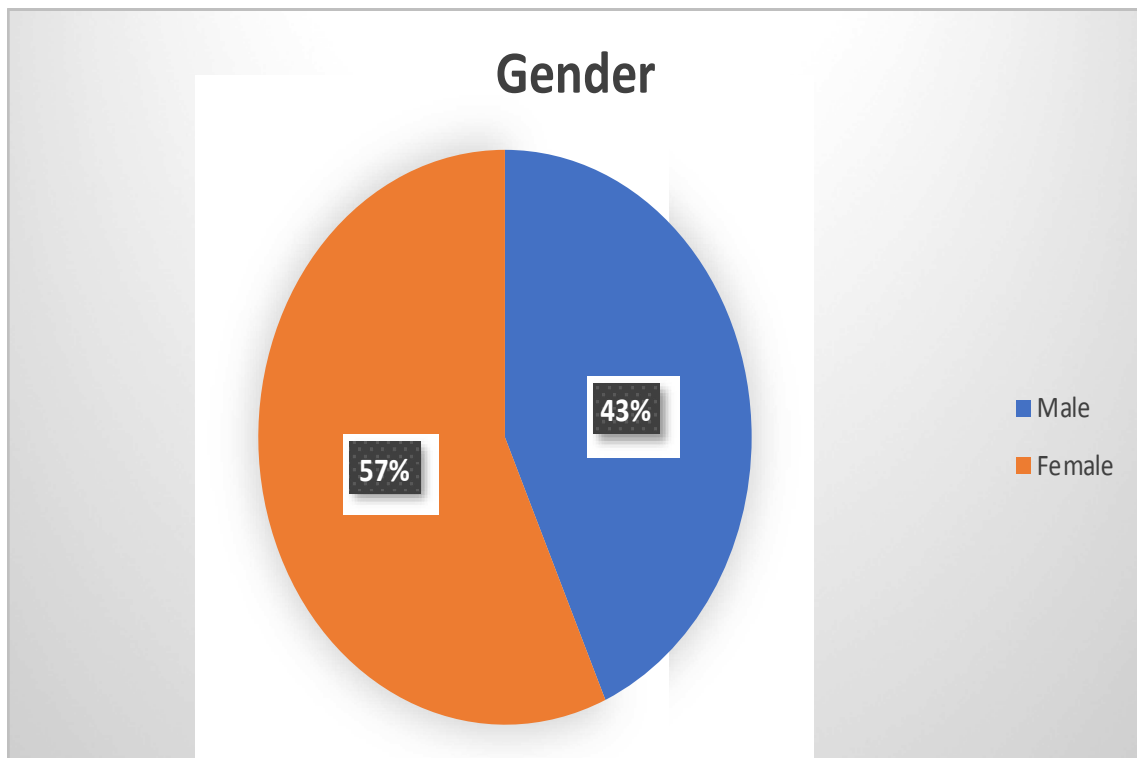
Patient Education Summary



Note. Figure 5 shows the overall responses among participants (n=30) regarding being educated on the surveyed diabetic strategies, including nutrition, meal preparation, home exercise program, medication management, skin protection, foot care and home modification strategies

Gender of Diabetic Participants

Figure 6

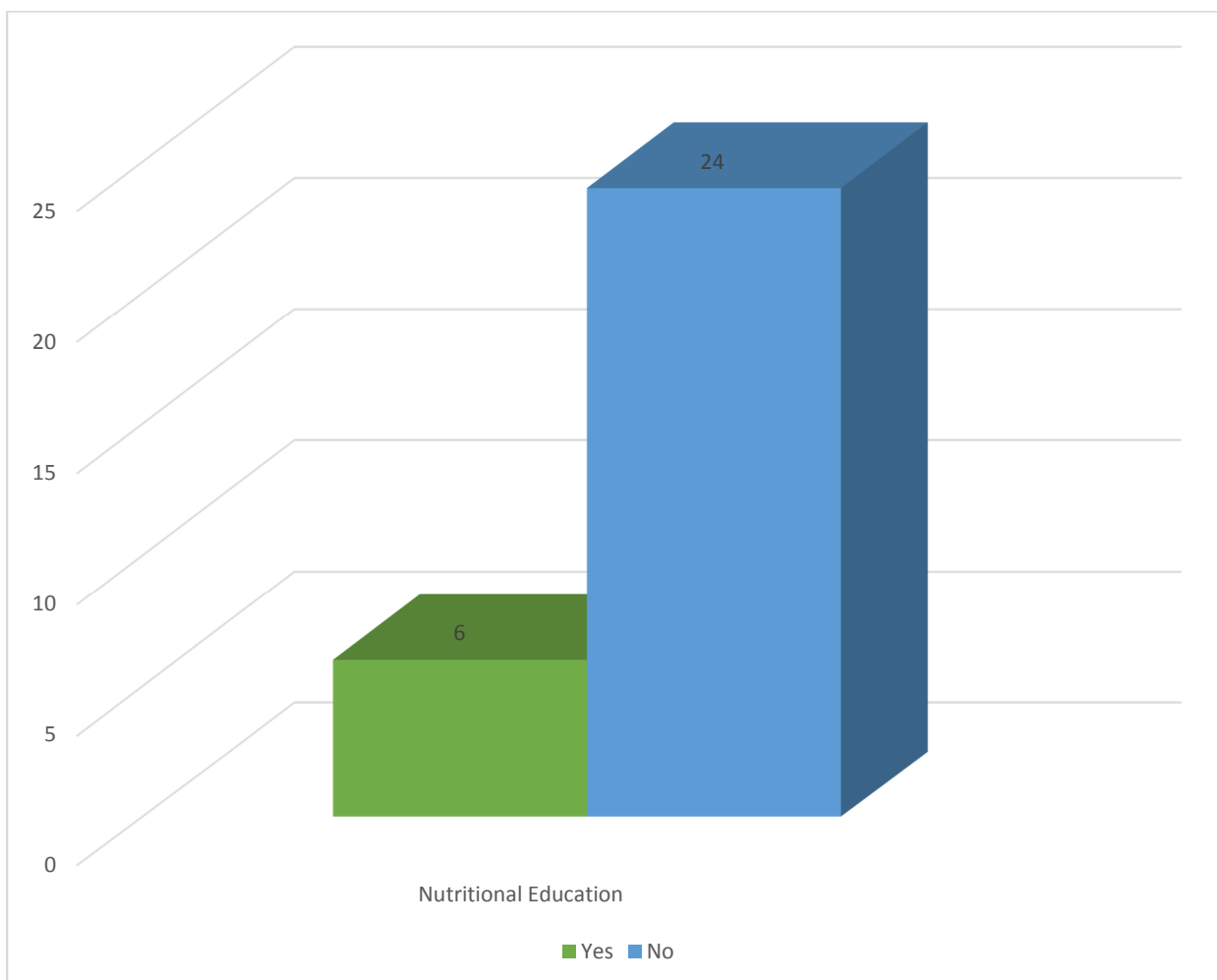


Note. Figure 6 shows the gender distribution of participants, with 57% percent identifying as female and 43% identifying as male.

Nutrition

Figure 7

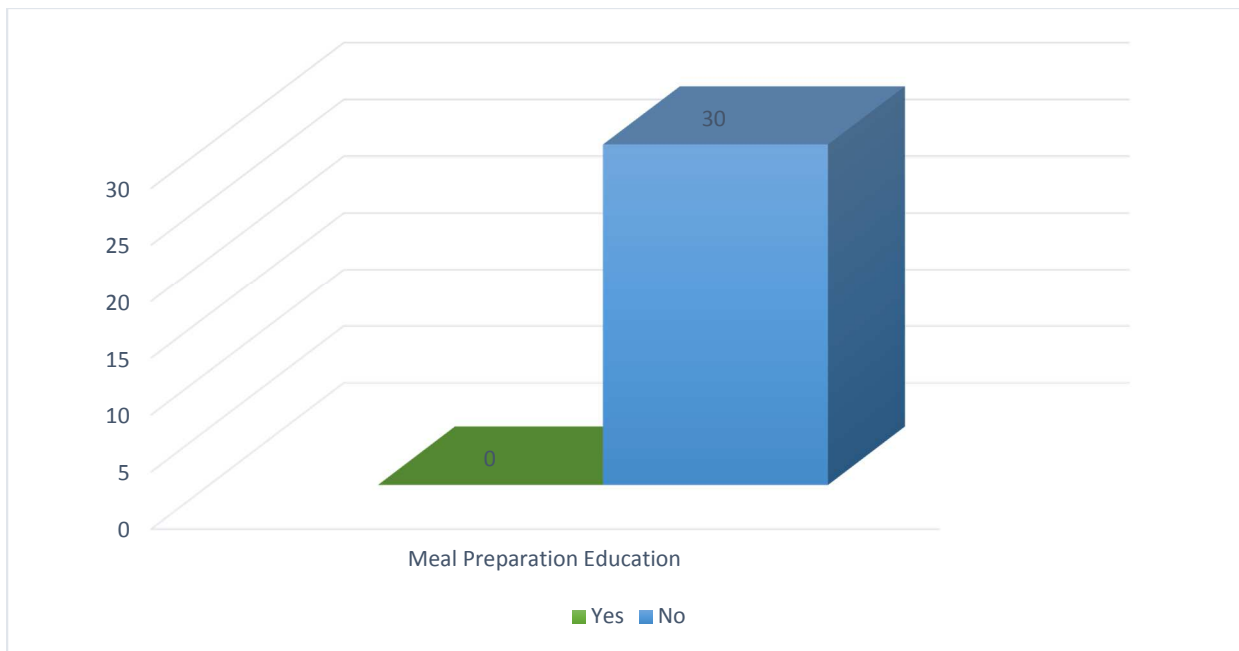
Nutritional Education Graph



Note. Figure 7 represents the number of participants that reported being provided with education on diet from the primary care physician after being diagnosed with diabetes with 6 of participants reporting that they were provided with nutritional education and 24 reported that they had not been educated on nutritional strategies to implement into their daily lives as a strategy to combat diabetes.

Meal Preparation Graph

Figure 8

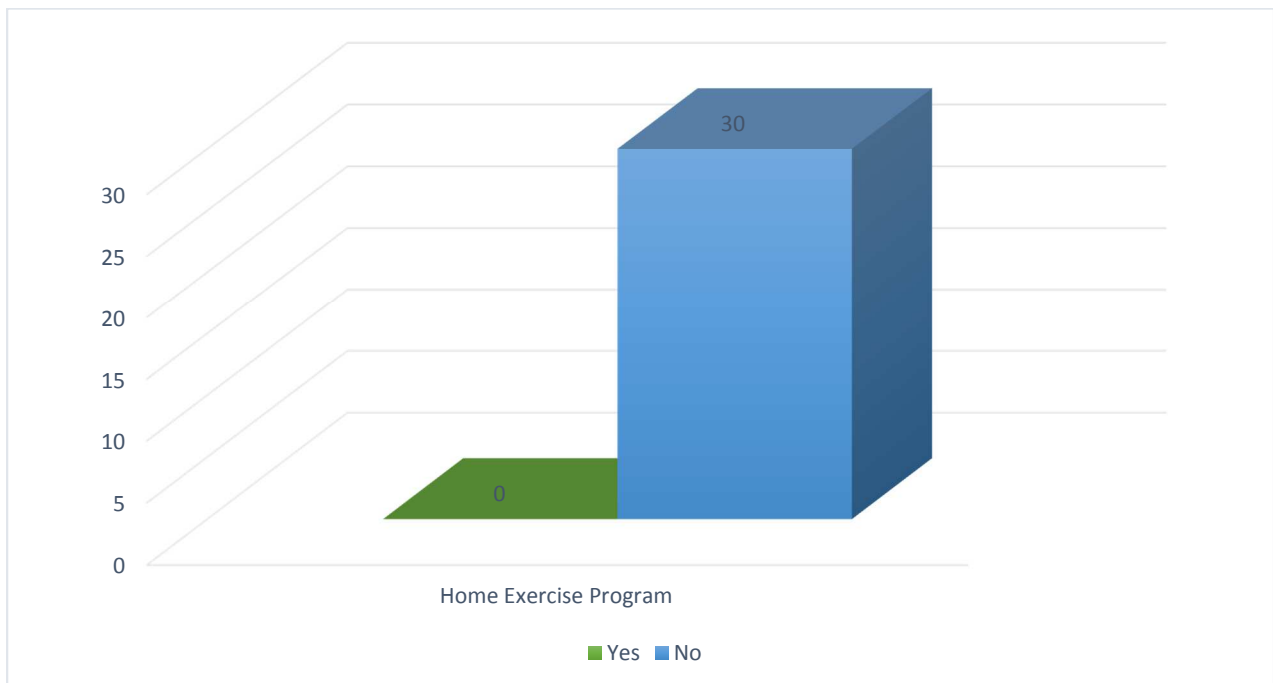


Note. Figure 8 represents the number of participants that reported being educated on meal preparation strategies for diabetic patients in the primary care setting. The participants n=30, reported 0% of meal preparation education.

Home Exercise Program Graph

Figure 9

Home Exercise Education

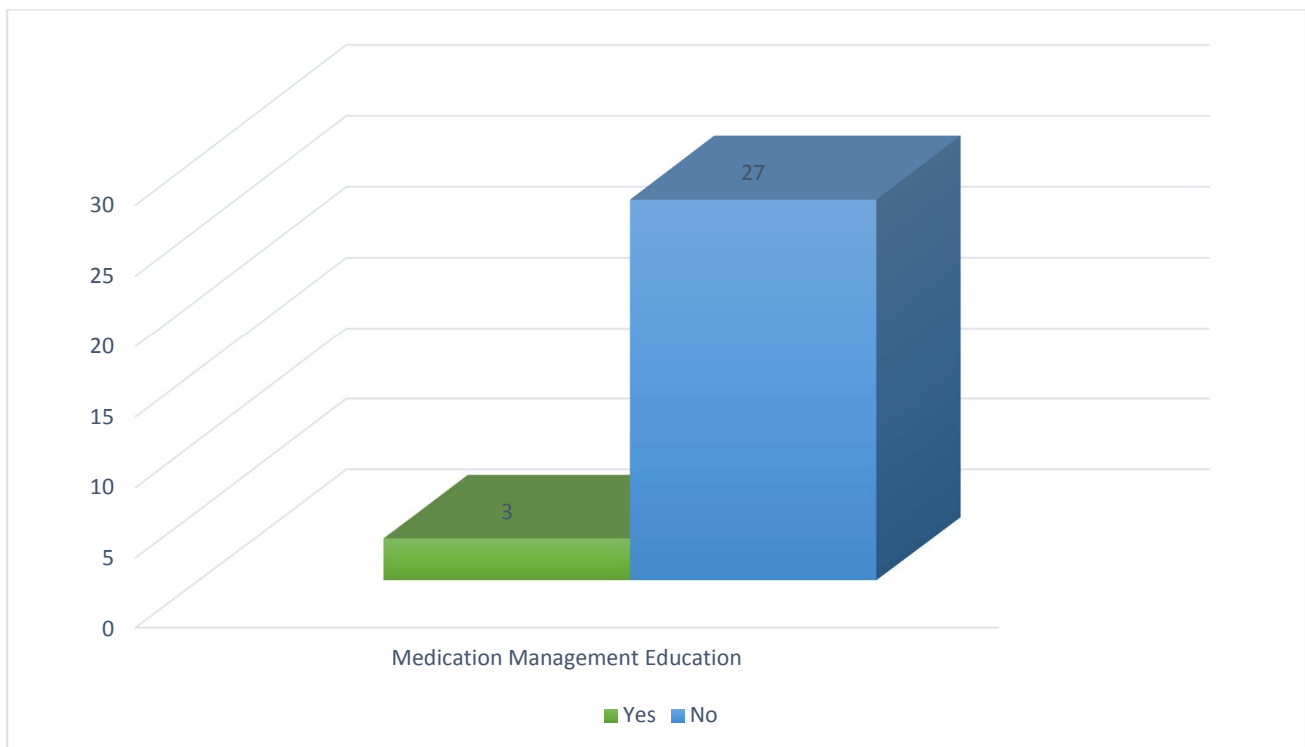


Note. Figure 9 represents the number of participants n=30, reporting education on being provided with or educated on a home exercise program with 0% of respondents stating (yes) had been provided with information on exercises.

Medication Management Graph

Figure 10

Medication Management Education

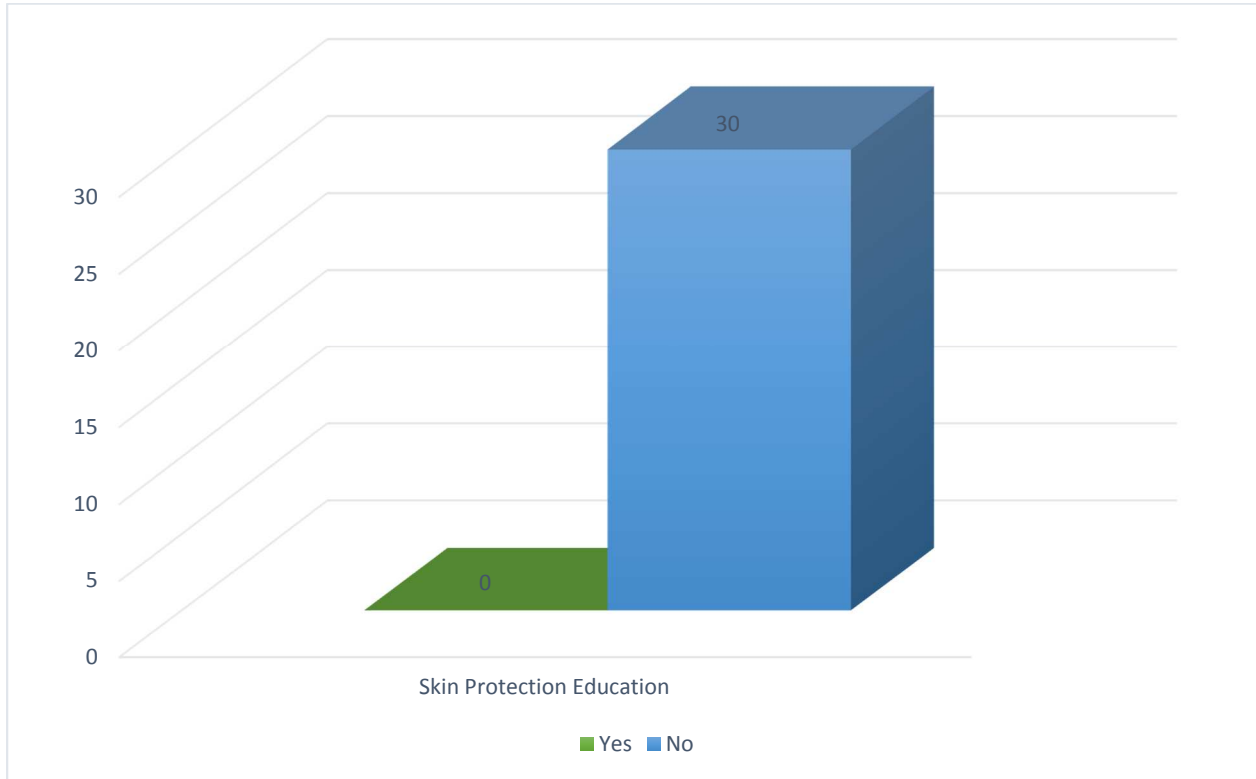


Note. Figure 10 represents the number of respondents that reported being educated on medication management strategies in the primary care setting. From the n=30 sample size, 3 respondents answered (yes) they have been educated on medication management strategies for diabetes, while 27 responded (no), they have not been educated on medication management.

Skin Protection Education Graph

Figure 11

Skin Protection Education

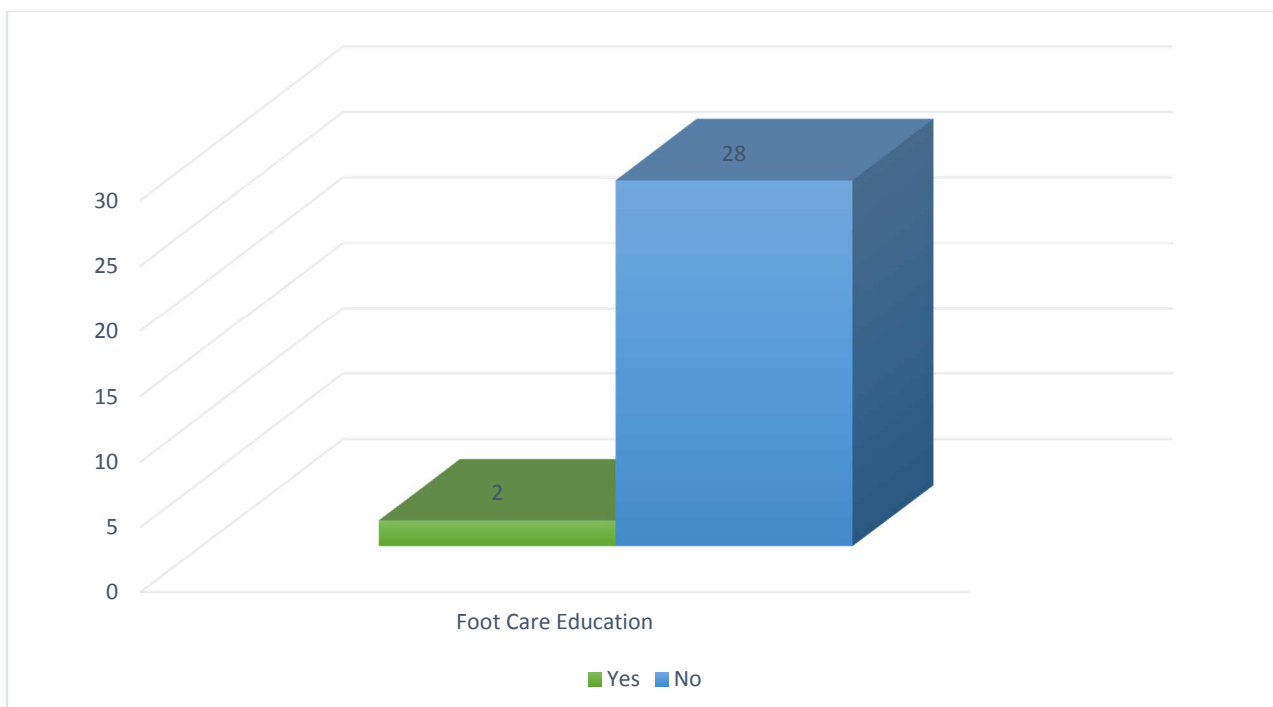


Note. Figure 11 represents the number of participants that responded to being educated on skin protection strategies and diabetes. From the sample size n=30, 0% of respondents reported being educated on skin protection strategies.

Foot Care Education Graph

Figure 12

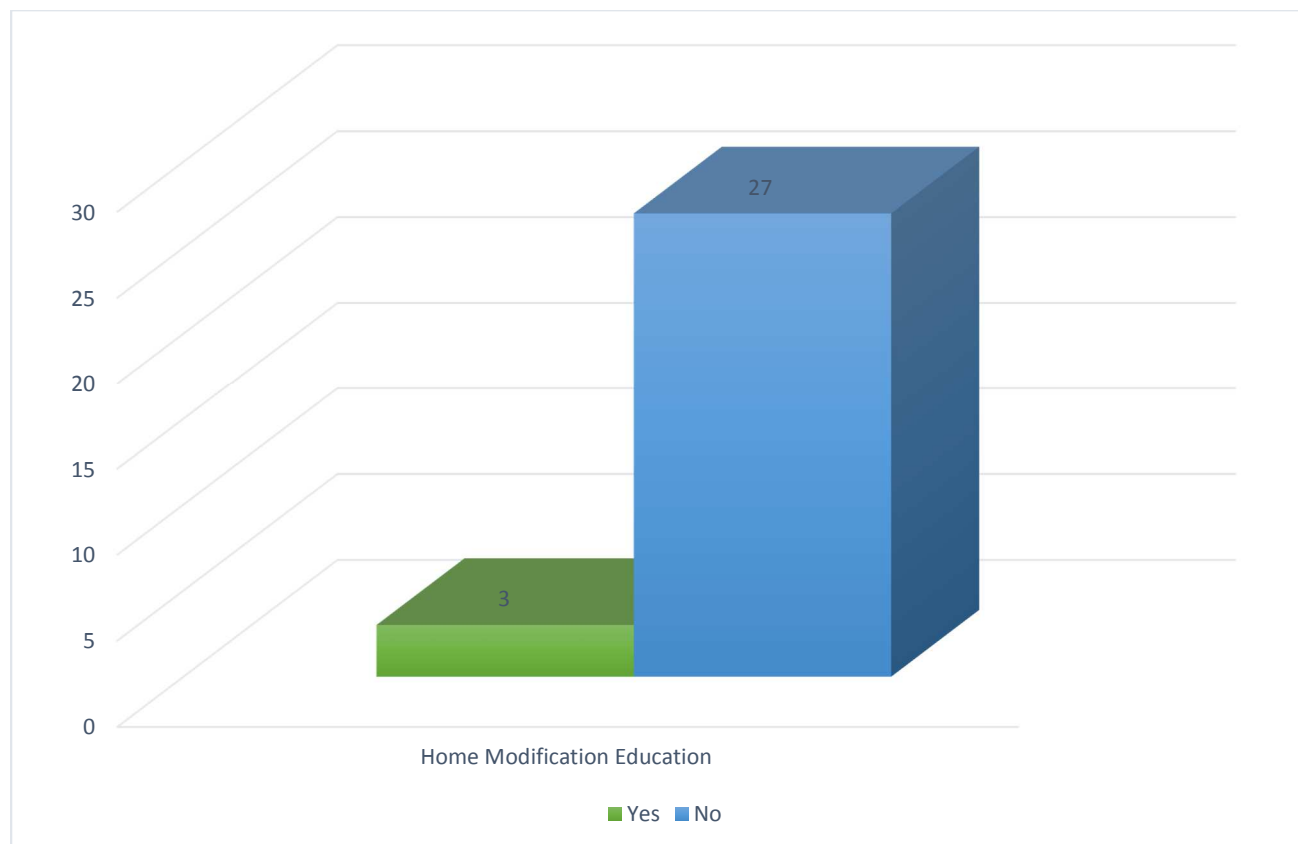
Foot Care Education



Note. Figure 12 represents the number of participants that responded to being educated on foot care education strategies in the primary care setting. From the sample size n=30, 2 responded yes to being educated on foot care strategies while 28 participants responded no.

Home Modification Graph

Figure 13



Note. Figure 13 represents the number of participants that responded to being educated on home modification strategies. From the sample size n=30, 3 of participants answered (yes) to being educated on home modification strategies, while 27 responded (no) to being educated on home modification techniques.

Quantitative Themes

The survey consisted of 9 close-ended questions for quantitative data collection. The purpose of the closed-ended questions was to identify the perceived types of diabetic education provided to patients diagnosed with diabetes in the primary care setting. The themes that were identified by responses of “no” from all participants (n=30) for education provided included meal preparation, home exercise program and skin protection strategies.

Education	Response
Meal Preparation	N= 30 (NO)
Home Exercise Program	N= 30 (NO)
Skin Protection Strategies	N=30 (NO)

These quantitative themes represent areas of concern indicating a particular lack of education provided in these three areas. Additionally, there were limited positive responses regarding education on foot care education and home modification strategies. These findings are indicative of a general lack of education being provided to diabetic patients in the primary care setting.

Data Interpretation

The researcher used a mixed-methods approach. Quantitative data related diabetic education was analyzed to provide insight into the amount of education provided to diabetic patients. Qualitative data were collected upon performing the interview with the physician. The results that were found provide insight into the lack of education provided to patients in order to treat their disorder. In addition, the researcher was provided with added insight into the challenges that primary care physicians are facing in the current climate. Also, the research provides a potential role for occupational therapy in the treatment of diabetic patients.

Finding 1: Primary Care Physician Perspective

The primary care physician was interviewed using an open-ended interview. The physician stated that a large majority of the practice's patients have been diagnosed with uncontrolled type 2 diabetes. The main challenges reported by the physician included a lack of time to address diabetic patient education and limitations in additional staffing to address patient needs. The physician stated that, due to time constraints, the areas of education that are primarily addressed with diabetic patients focus on diet and medication management in order to reduce blood sugar levels. The barriers that the physician mentioned in regard to the diabetic patient population include a lack of health literacy and financial barriers to buying adaptive equipment that may be needed to pay for additional caregiver services/handyman services if needed for the placement of grab bars or the reconstruction of bathrooms. The final question addressed the physician's familiarity and knowledge regarding occupational therapy and the role that occupational therapists can play in the primary care setting. The physician was unaware of this potential role of occupational therapists. The physician reported being familiar with occupational therapists in the hospital but was under the impression that the primary role of an occupational therapist focused on dressing, bathing, grooming, and education on hip kits and splinting. The idea of adding an occupational therapist to the practice or as a consultant had never been considered.

Based on these findings, there is a clear need to provide education on the benefits an occupational therapist can provide in the primary care setting. As indicated in the literature review, primary care providers cited lack of time as a barrier in the treatment of diabetic patients. Meeting the challenge of increasing time with patients may not be a viable option as the geriatric population continues to rise. The addition of an occupational therapist to the primary care setting can thus serve as a complementary asset to the primary care team in order to assist in the education of diabetic patients.

Finding 2: Lack of Education

The survey results indicated a lack of patient education in three main areas: meal preparation, home exercise programs and skin protection strategies. In conjunction with the prior physician interview these educational interventions were left out of the physician's interview responses to the question focused on what educational materials were provided to diabetic patients. Messina et al. (2017) conducted a systematic review of factors directly related to diabetic prevention in primary care settings. The researchers found that factors such as workload, time constraints, lack of resources, and lack of patient motivation contributed to challenges affecting diabetic prevention within the primary care setting. There is a clear need for diabetic patient education within the primary care setting. Additionally, occupational therapists can provide a diabetic educational role within the primary care setting.

Finding 3: Limited Education

The survey results indicated limited diabetic education in the areas of nutrition, medication management, foot care, and home modification. According to Zgibor and Songer (2001), physicians reported that there is an inadequate amount of time allocated to provide in-depth treatment for diabetic patients. Evidence suggests that primary care concerns regarding time constraints may parallel with diabetic patients' survey results reporting limited diabetic education that has been offered.

Summary

Several themes emerged from the interview and diabetic surveys that were completed. Responses from the primary care physician and diabetic patients were consistent with the literature review. Profound areas to the challenges and barriers the primary care physician states was consistent with the physician's responses. In addition, diabetic patients' responses were also consistent with the literature review regarding the identification of the lack of diabetic education

being provided to diabetic patients. These findings may point to the value of connecting occupational therapy to primary care in the effective education of diabetic patients.

Chapter 5: Discussion

The objective of this pilot study was to identify to specific type 2 diabetic education materials that are provided in the primary care setting and assess a potential role for occupational therapy. The study was conducted using two methods to gather information, including an interview with the primary care physician and a patient survey administered for diabetic patients. The physician interview sought to understand challenges associated with the current level of education provided to type 2 diabetic patients in the primary care setting and also to identify the physician's level of familiarity with about occupational therapy. The patient survey was conducted to assess the type of education that is currently being provided in the primary care setting. The lack of education being provided to type 2 diabetic patients directly impacts their overall well-being and management of the disorder.

Because primary care physicians provide care through a holistic approach, it is important to look through the holistic lens of occupational therapy and its approach to providing education to type 2 diabetic patients. The Kawa model is a holistic approach derived from occupational therapy practice, and is a perfect fit for providing education to type 2 diabetic patients.

Identifying Gaps in Education

There have been several gaps identified throughout the literature review and capstone project surrounding diabetic education.

Gap 1

The open-ended interview conducted with the primary care physician identified a clear gap in the physician's knowledge of the occupational therapy discipline. Based on previous research, primary care physicians have time constraints that affect diabetic patient education. The amount of time and resources allocated to a diabetic patient must allow for enough time to properly educate the patient on the chronic disorder.

Gap 2

Patients noted there was a limited amount of diabetic education being provided to them. Insight provided to the primary care physician is a priority, which may limit the gap of education being provided to current diabetic patients at the office. The quantitative data survey completed by type 2 diabetic patients in Wayne County were in direct alignment with the literature review

that focused on the lack of education being provided. This study particularly highlighted an area of concern focused on the lack of education being provided in the areas of meal preparation, home exercise programs, and skin protection strategies. These are vital areas that need to be addressed in the care of type 2 diabetic patients.

Occupational Therapy and Diabetic Education

Occupational therapists play a significant role in assisting diabetic clients in managing their illness. Occupational therapists can provide education in numerous areas of diabetic patients' lives, which may be effective in increasing occupational performance. The following list of services occupational therapists can provide is adapted from the American Occupational Association (2011)

- Promote healthy food options and provide adaptive and safe cooking methods
- Instruct in safe and appropriate ways to incorporate exercise and physical activity into daily routines
- Provide techniques to organize and track medications
- Instruct in the use of low-vision such as the use of nonvisual devices to insulin management
- Instruct and provide strategies to successfully use a talking blood glucose monitor or use any blood glucose monitor one-handed
- Incorporate protective techniques and compensate for peripheral sensory loss in activities that involve exposure to heat, cold, and sharp objects
- Educate in techniques to structure time and simplify activities to cope with depression, such as breaking down dietary changes and an exercise program into manageable steps and incorporating them into present daily routines

Occupational therapists are held to a strict code of ethics in order to provide services and interventions and education to patients. An overview of these Occupational Therapy Code of Ethics is provided below.

Occupational Therapy and Code of Ethics

The occupational therapy profession is focused on seven values: Altruism, Equality, Freedom, Justice, Dignity, Truth and Prudence (AOTA, 1993). The profession of occupational therapy is also guided by principles of ethical decision making, including: Beneficence, Nonmaleficence, Autonomy, Justice, Fidelity and Veracity (American Journal of Occupational

Therapy, 2020). These codes and principles guide practice and can be attributed to the benefits of diabetic education and diabetic care.

The principle of Beneficence includes all forms of actions that are intended to benefit other individuals. The act of beneficence requires taking action to promote good and prevent harm to patients. Occupational therapists should demonstrate a concern for the well-being and health of diabetic patients. The act of providing education to diabetic patients allows for the promotion of health and well-being which can foster increased quality of life and decrease diabetic complications.

Advocacy for Occupational Therapy

As clinicians, we need to advocate for ourselves to primary care physicians and other disciplines in order to increase our role in this setting. Occupational therapists can foster and bring awareness regarding diabetic education and interventions to diabetic primary care patients. According to the American Occupational Therapy Association (2011), the addition of occupational therapy in the primary care setting can increase cost effectiveness, prevent hospitalizations, improve quality of life goals, enhance patient safety and well-being, and increase patient satisfaction. Several educational barriers have been identified in this study that negatively impact type 2 diabetic patients' access to diabetic education. Occupational therapy has been identified as an effective part of the primary care team that is associated with decreased financial costs (Dahl-Popolizio, Manson, Muir, & Rogers, 2016).

Advocating for occupational therapy is an essential part of increasing the opportunity for occupational therapists to be recognized as effective team members in the primary care realm. Occupational therapists can advocate at a local and national level to provide insight into the areas of education that can be facilitated by occupational therapists for diabetic patients. This can be accomplished by occupational therapists providing education to primary care physicians in and around their geographic area, with a focus on educational materials and strategies that can be utilized by diabetic patients.

Primary Care and Occupational Therapy

According to Donnelly et al. (2014), there is a perfect fit between occupational therapy and primary care. The researchers conducted a study to identify structures supporting the incorporation of occupational therapy in the primary care setting. The results indicated that a clear understanding of the role of occupational therapy is critical for physicians in order for

occupational therapists to become part of the interdisciplinary team. Occupational therapists and primary care physicians both apply a holistic approach when treating patients. Occupational therapy is emerging in the primary care setting; however, advocating and providing education about the discipline is critical in order to contribute to the interdisciplinary team.

Garvey et al. (2015) conducted a study to examine the effectiveness of occupational therapy in a self-management program for patients living with multiple chronic conditions in the primary care setting. The participants included 50 patients from family practice and primary care settings. The intervention included a six-week program conducted in three primary care centers. The interventions focused on self-management, energy conservation, stress management, physical activity, healthy eating, medication management, and effective communication. The primary focus of the program was increased activity participation, and the secondary focus was increased self-efficacy and an increase in activities of daily living. The results indicated a significant improvement in activity participation as well as in self-efficacy and independence in performing activities of daily living, which promoted an improvement in overall quality of life. Occupational therapists can provide interventions and strategies that facilitate increased participation in everyday life. Occupational therapy can contribute to primary care by addressing the impact of individuals' roles, habits, and routines in order to safely and effectively management chronic conditions (The American Journal of Occupational Therapy, 2020).

Recommendations

Research supports that primary care practices are not providing enough diabetic education for diabetic patients in order for them to effectively manage the diabetic condition. It is recommended that occupational therapists should be included as an effective part of the primary care team in order to provide diabetic patient education to diabetic patients in order to successfully manage the disorder.

Occupational therapists can address diabetic patients through a holistic approach. The following recommended steps can be performed by an occupational therapist to educate diabetic patients in the primary care office. An occupational therapist can be useful in this regard to help overcome the barriers identified in the physician interview.

- Educate the diabetic patient on the course of the disease: Occupational therapists can provide education on the course of type 2 diabetes and affiliated complications that can occur if the disease is not managed properly.

- Provide meal planning tips and create grocery lists: Occupational therapists can educate diabetic patients on proper food choices, recommend a food diary, and create healthy grocery lists to complement their diet.
- Create medication schedules and reminder tips: Occupational therapists can educate diabetic patients on opening and closing medication containers, setting timers in order to take their medication at the right time, advantages of pill boxes, and knowing when to report adverse reactions.
- Facilitate a daily exercises regime: Occupational therapists can educate diabetic patients on the benefits of daily exercise and assist in establishing a routine.
- Educate on home safety strategies within the home: Occupational therapists can provide education on the removal of throw rugs and cords.
- Provide education on skin protection techniques: Occupational therapists can provide education on the benefits of wearing shoes while in the home and checking the bottoms of feet daily.
- Provide education on low vision strategies within the home to adapt their environment and provide training on equipment and teach vision strategies such as scanning in order to keep diabetic patients safe in their own home.
- Provide educate to caregivers of type 2 diabetic patients on safety precautions.

In addition, occupational therapists may be utilized in the primary care office to perform staff training to office staff to provide diabetic handouts to patients. The occupational therapists can perform monthly educational classes focused on type 2 diabetic patient needs including cooking classes, skin care management, exercises groups and an array of additional classes focused on providing specific education in order to management the disorder and increase positive patient outcomes. There may be the development of a monthly support group that can be ran by an occupational therapist.

Limitations

There are numerous limitations to this capstone project. Since this study was conducted during the global Covid-19 pandemic, participants may have felt a sense of urgency to complete the survey quickly and then leave the building in order to limit their exposure to other individuals. This pilot study was limited by convenience sampling and lacked the ability to assess multiple primary care offices. Only one primary care office was included in the sample,

and only one primary care physician was interviewed. The study had a small sample size (n=30). There are also several limitations in reference to the sampling of the survey; for example, education level and financial status were not assessed. These two areas may have provided insight into the socioeconomic challenges faced by the study participants.

Strengths

Strengths identified through the survey process included a supportive primary care physician and staff member that were willing to assist in the data collection for the capstone project. The primary care physician was eager to participate in the open-ended interview. The open-ended nature of the interview allowed the researcher to gain insight into the physician's perspective on areas of concern and barriers to providing diabetic care. The questions asked about participants' type 2 diabetic education are in alignment with the type of education that is not only required but also addressed by occupational therapists. The patients that participated in the study had a desire to complete the survey. All of the survey participants were diagnosed with type 2 diabetes.

Implementations for Future Research

This capstone project provides insight into the lack of education provided by primary care physicians to type 2 diabetic patients. Upon interviewing the primary care physician, the researcher was able to understand the barriers that were identified through this open-ended discussion. Time constraints and lack of resources, particularly related to the lack of additional funding for staff resources such as training and products, were profound factors that were identified in the literature review. Strong evidence supports the role that occupational therapists can play in the education of diabetic patients. In addition, evidence supports the inclusion of occupational therapy as part of a primary care team as an effective way to help patients manage chronic conditions. Occupational therapists need to be included in the health model realm for the treatment of type diabetic patients. Research suggests, occupational therapists are a valued asset to the health care team.

Primary care physicians need to understand the meaningful role occupational therapists can play within their practices. They first must understand the benefits that occupational therapists can foster by providing education to diabetic patients, to which in turn will create opportunities for patients to better manage the disease. Future research performed on a larger scale is necessary to determine the role that occupational therapy can play in educating diabetic

patients in the primary care setting. This may be facilitated by the incorporation of multiple primary care clinics in different locations across Michigan and a larger sample size. Future research should also be conducted in a variety of neighborhoods, such as in major cities and rural counties. In order to be recognized as a critical member of the primary care team, occupational therapists need to advocate for their presence in this setting. A larger study may show a significant amount of type 2 diabetic patients reporting a lack of diabetic education being provided. This information will be important for the effective incorporation of occupational therapists into the primary care setting.

Conclusion

This capstone project's aim was to identify the amount of patient education that is currently being provided to diabetic patients in the primary care setting. The research findings would then build a case for the inclusion of occupational therapy in the primary care setting. The findings initially indicated specific challenges identified by the primary care physician, such as a lack of time and resources, which were considered to be factors in the limited diabetic education that was being provided at this office. The final analysis showed that diabetic patients are indeed lacking in the amount of education that they are receiving to successfully manage their disease. The results provided evidence that occupational therapists can be a meaningful asset to the primary care team, which in turn will benefit diabetic patients' overall health and well-being.

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