EDUCATING PROVIDERS ON COGNITIVE BEHAVIORAL THERAPY TO TREAT TYPE 2 DIABETES-RELATED PSYCHOLOGICAL DISTRESS

by

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Esther Yoonhee Choi titled Educating Providers on Cognitive Behavioral Therapy to Treat Type 2 Diabetes-Related Distress and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

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DEDICATION

I dedicate this DNP project to my uncle, Danny Lee, whom the Lord had called home before I completed this DNP project. He was my inspiration for changing my specialty during the middle of this program and why I chose this project.

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ABSTRACT

Purpose: To increase knowledge of healthcare providers (HCPs) on psychological distress related to T2DM and their intent to use or refer to CBT as a treatment. Presentation effectiveness and barrier identification will also be assessed.

Background: Major depressive disorder (MDD) and diabetes-related distress affect individuals with type 2 diabetes mellitus (T2DM). According to the American Psychiatric Association (APA), cognitive behavioral therapy (CBT) is recommended to treat moderate depression with or without psychotropics. Though CBT is effective and well-established, this treatment approach is not well utilized.

Methods: Participants were recruited from an integrated health center called Korean Community Services (KCS) in Buena Park, California. The project intervention included a 20-minute educational presentation. In addition, participants were asked to complete pretest and posttest surveys to determine if the presentation increased HCPs' knowledge, intentions to use CBT, or refer to CBT as a treatment.

Results: The project was implemented via a 20-minute asynchronous PowerPoint presentation. All (100%) of the HCPs increased in their knowledge of CBT and T2DM related psychological distress. HCPs also showed a positive shift in the stage of change by their increased intention to utilize or refer to CBT.

Conclusion: This DNP successfully created an asynchronous PowerPoint presentation to educate HCPs about CBT and T2DM related psychological distress. Educational interventions can improve knowledge and intention to utilize CBT and identify barriers that affect the sustainability of CBT interventions in practice. Future studies should include a larger sample size

and examination of behavioral change. Moreover, intervention should be implemented at various locations.

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a life-changing chronic condition and is often perceived as a threat to a person's way of life. As a result of this condition, individuals face psychological challenges, including major depressive disorder (MDD) and diabetes-related distress (DRD). As the prevalence of psychological distress in T2DM individuals increases with the aging and growing population, studies emphasize the importance of examining individuals' emotional well-being while providing diabetes care (Jeon, 2018). MDD is psychological distress that is identified as a global burden and the leading cause of disability (World Health Organization, 2020). DRD is another psychological distress or emotional burden that emerges when an individual with T2DM suffers from the overwhelming demands of self-management, uncontrollable glycemic levels, lack of social support, and limited access to care (Islam et al., 2013; Owens-Gary et al., 2019). Untreated T2DM related psychological distress may increase the risk for suicide, diabetes-related complications, and poor quality of life, in addition to increased health costs (Jeon, 2018).

A variety of treatments for MDD and DRD are available, one of which is cognitive-behavioral therapy (CBT). Studies have shown that when healthcare providers (HCPs) are provided with appropriate training, CBT can be implemented in the routine management of T2DM to prevent psychological distress and improve glycemic control in T2DM patients (Xu et al., 2020). Therefore, the focus of this Quality Improvement (QI) project was to educate HCPs to increase their knowledge of CBT and T2DM related psychological distress, intent to use or refer to CBT as a treatment of T2DM related psychological distress and assess the barriers to integrating CBT into practice at the Korean Community Services (KCS) center.

Background Knowledge

Diabetes mellitus (DM) is a significant health issue and a growing global epidemic that has reached alarming levels. DM is the seventh leading cause of death in the US and was the cause of 1.5 million deaths worldwide in 2017 (American Diabetes Association [ADA], 2020). In 2019, approximately 31 million US people were affected by diabetes, and by 2045, diabetes prevalence is projected to grow to 36 million (Saeedi et al., 2019). As diabetes rapidly grows, there is an urgent need to prevent and improve care for individuals who live with diabetes or have prediabetes. Delaying treatment or lack of proper self-management of diabetes can lead to negative consequences and complications, including blindness, cardiovascular diseases, stroke, foot ulcers, and even death (Darwish et al., 2018).

Type 2 Diabetes Mellitus (T2DM)

One in every 10 Americans have diabetes, and approximately 95% of this population have type 2 diabetes mellitus (T2DM) (Centers for Disease Control and Prevention [CDC], 2019). T2DM is a debilitating disease that disrupts the body from using glucose as energy, and the pancreas does not produce enough insulin, which causes a buildup of sugar in the blood. T2DM is preventable through lifestyle modifications and self-care regimens. Diabetes self-management requires individuals to eat a low carbohydrate diet, exercise, maintain foot care, smoke cessation, take prescribed medications, and even administer insulin injections to maintain blood glucose levels (American Diabetes Association [ADA], 2020). Based on the ADA guidelines, the main goal for T2DM patients is to achieve glycemic control through three criteria: maintain an HbA1c less than 7.0, blood pressure below 130/80 mmHg, and low-density cholesterol below 100mg/dL (Katon et al., 2009). Unfortunately, while the effectiveness of preventing and managing T2DM is apparent, nearly half of this patient population fails to meet ADA guidelines to achieve glycemic control (Polonsky & Henry, 2016).

Major Depressive Disorder (MDD)

Major depressive disorder (MDD) is a psychological disorder that is characterized by persistent low mood, poor concentration, fatigue, lack of pleasure or interest in previously enjoyable hobbies, difficulty sleeping, appetite changes, feelings of guilt, hopelessness, helplessness, and worthlessness nearly every day for two weeks (American Psychiatric Association [APA], 2013). MDD can be chronic and significantly impact individuals from functioning in their day-to-day lives, including their ability to perform at work or school, maintain interpersonal relationships with loved ones, and engage in their perspective communities. It is a leading cause of disability that affects more than 264 million people worldwide (World Health Organization [WHO], 2020). In the US alone, 25 million Americans suffer from MDD, and more than half die from suicide (American Foundation for Suicide Prevention [AFSP], 2020).

The prevalence of MDD among T2DM is two to three times higher than that of the general population, and T2DM patients are twice as likely to have suicidal ideations (Badescu et al., 2016; Elamoshy et al., 2018). MDD and diabetes can become increasingly challenging as they are worsened by each other (Holt et al., 2014). The relationship between diabetes and MDD is bidirectional, meaning that diabetic patients are likely to develop MDD than non-diabetic patients, while depressed patients have a greater likelihood of developing diabetes than non-depressed patients (Alzoubi et al., 2018). Some risk factors associated with MDD, and diabetes include sex, body mass index, socioeconomic status, marital status, childhood adversity, and social deprivation (Alzoubi et al., 2018).

Despite the alarming number of people it impacts, MDD is a highly treatable and preventable psychiatric illness (AFSP, 2020). Therefore, HCPs must be aware of MDD and T2DM and understand which treatment options would most benefit their patients to treat this patient population appropriately.

Diabetes-Related Distress

Individuals with DM are prone to diabetes burnout, also known as diabetes-related distress (DRD) (Wardian & Sun, 2014). DRD is defined as an adverse emotional reaction that emerges when an individual experiences overwhelming demands of self-management, uncontrollable glycemic levels, lack of social support, and limited access to care (Islam et al., 2015; Owens-Gary et al., 2019). These negative emotions in response to diabetes are expressed as anger, frustration, discouragement, overwhelmed, hopelessness, and fear (Guo et al., 2019). In addition, DRD can be exacerbated by limited knowledge of diabetes, poor understanding of what self-care activities entail, and poor interactions with primary care physicians (Guo et al., 2019).

Studies have found that DRD is twice as prevalent as MDD. At least one out of three diabetic patients suffer from DRD, yet 70% of these patients do not meet the criteria for MDD (Owens-Gary et al., 2019; Wardian et al., 2018). Patient screening for DRD can be done utilizing a 17-item diabetes-related distress scale (DDS-17), which was developed by Polansky et al. (2005) to use in clinical and research settings to assess four different domains of DRD. The four domains of the DDS-17 include emotional burden (EB), physician-related distress (PRD), regimen-related distress (RRD), and interpersonal distress (ID). The screening tool has 17 questions answered using the Likert scale, which also correlates to a number. Based on the responses, the mean item score can be utilized by clinicians to assess for DRD. This tool enables providers to assess the context of the patients' distress and find direct interventions to improve their care (Fukuda et al., 2019).

Studies have examined the DDS-17 results among patients with T1DM and T2DM and found that DRD is experienced differently in each population. In T2DM patients, DRD is associated with HbA1c levels. Hemoglobin A1c (HbA1c), also known as glycated hemoglobin, is a protein found in red blood cells that carries oxygen throughout the body and binds to sugar in the blood (ADA, n.d.). The HbA1c test is routinely assessed in diabetic patients to ensure their blood sugar level is within the target range. Based on these results, providers modify treatment plans. Findings show that higher HbA1c levels are positively correlated to higher DRD levels in T2DM patients (Wardian & Sun, 2014). EB and RRD were also positively correlated to DRD levels. Emotional burden (EB) is defined as feeling powerless and frustrated with managing glucose, and regimen-related distress (RRD), arises from fear and concerns about not monitoring blood glucose, eating poorly, and worrying about hypoglycemia, were also strongly correlated to DRD. Therefore, intentional efforts to assist and care for patients experiencing DRD are essential. Treating DRD is as vital as treating MDD as it could assist T2DM patients in reducing HbA1c, engaging in self-management, and addressing psychosocial needs (Wardian & Sun, 2014).

Korean Americans and Mental Health

Korean Americans are the fifth fastest-growing Asian immigrant group in the US (Park & Bernstein, 2008; Sin et al., 2011). According to a study by Kim et al. (2017), the prevalence of

MDD among Korean American diabetics was 44.2%, which was higher than in Americans with diabetes (28.7%) or without diabetes (20.1%). First-generation Korean immigrants experience alienation and loneliness related to acculturation challenges, including adapting to changes in their socioeconomic status and environment; alienation and loneliness are closely linked to MDD (Hawthorne, 2008; Sin et al., 2011). Though the prevalence of MDD is high among Korean American immigrants, MDD is underreported by this population because of their perception of mental illnesses. In this culture, mental illness is considered a weakness and brings disgrace to the family. Some traditional Koreans also view mental health as a disorder related to evil spirits (Park & Berstein, 2008). For these reasons, Korean immigrants are afraid of being stigmatized and often conceal their psychological symptoms.

Primary Care Settings

More diabetic patients with psychological distress are treated in primary care than in specialty care (Xu et al., 2020). Primary care providers (PCPs) are often the first encounter for individuals with mental health issues (Hodgkinson et al., 2017; Ross et al., 2015). Nevertheless, many individuals and their families do not actively seek mental health care because of the existing barriers such as the stigma of receiving mental health treatments, the demands of daily stressors that prevent individuals from prioritizing their mental health needs, and fear of thinking treatment could lead to hospitalization or separation from family (Hodgkinson et al., 2017). In addition, the lack of discussion or advice provided by PCPs is often perceived as an indication that nothing needs to be changed and that current lifestyle choices are appropriate (Ross et al., 2015).

In a community-based interview, patients with a severe mental health issue perceived their PCPs to lack adequate knowledge about mental health (Ross et al., 2015). PCPs were unwilling to engage in conversations about mental health because their patients' concerns were out of their scope of practice. This study also acknowledged that primary care providers have challenges in meeting the mental health needs of families because of the time constraints, priorities, and not being sufficiently trained on mental health issues (Hodgkinson et al., 2017; Ross et al., 2015). These same issues discourage providers from addressing T2DM patients' mental health issues. Furthermore, inadequate resources or support from mental health specialists potentially can contribute to PCP's lack of focus on the mental health needs of patients (Owens-Gary et al., 2019).

Strategies are needed in primary care settings where T2DM is commonly seen and managed (Cummings et al., 2019). One recommendation is to increase accessibility for patients with mental health by providing additional training and education for primary care providers and staff (Hodgkinson et al., 2017; Owens-Gary et al., 2019). Education and training can increase providers' comfort level to discuss, identify, and treat mental health concerns (Hodgkinson et al., 2017). Another recommendation for HCPs in the primary care settings is to reassess their practices, consider what could help individuals engage in mental health care, and implement incremental changes (Hodgkinson et al., 2017).

Cognitive Behavioral Therapy (CBT)

Many researchers argue that MDD is a separate entity from DRD, but both are associated (Cummings et al., 2019; Polonsky et al., 2005; Noroozi et al., 2017). While there are effective treatments for each condition, findings show that CBT can effectively manage DRD, MDD, and

T2DM. Cognitive-behavioral therapy (CBT), a gold-standard psychotherapy treatment, is recommended by the APA as a tool to treat moderate depression in patients with or without the use of antidepressants (APA, 2013). Studies have found that individual CBT is as effective as antidepressants when treating individuals with MDD (Marques & Hughes, 2021). In addition, CBT substantially impacts psychological and behavioral factors in regulating blood glucose levels and improving the quality of life in T2DM patients (Noroozi et al., 2017).

CBT can be used as a framework to understand an individual's psychological distress and presenting problem. Unlike other types of psychotherapy, CBT aims to empower individuals by helping themselves with techniques such as identifying their maladaptive behaviors, replacing inappropriate beliefs with more realistic thoughts, and developing improved coping skills (Uchendu & Blake, 2016). Many HCPs, including psychiatrists, psychiatric mental health nurse practitioners, clinical psychologists, diabetes nurses, and trained health professionals, have successfully offered CBT and improved health outcomes in patients. The therapeutic alliance and supportive presence that the provider offers is a critical component of CBT (Okamoto et al., 2019). Although the efficacy of CBT is well-established, and various HCPs can deliver CBT, providers' perceptions, preferences, concerns, and lack of relevance of CBT to their practice are barriers in providing patients with access to this treatment.

Local Problem

According to the 2019 US Census (n.d.), Orange County (OC), California, has a population of 3.17 million people and is the sixth-largest county in the US. The prevalence of diabetes is 7.1%, which is lower than California (10.4%) and half of the counties in California. However, diabetes is the eighth leading cause of death in OC (OC Healthier Together, 2019).

Given that at least 30% of adults with T2DM develop DRD, and depressive symptoms occur comorbidly twice as frequently than alone, psychological distress in T2DM needs to be closely investigated and addressed (Holt, 2014). OC was also ranked as one of the worst counties for behavioral healthcare services, with 56.6% of the residents reported needing behavioral health care services for psychological distress and only half of the adults receiving them (OC Healthier Together, 2019).

The Orange County Health Care Agency (OCHCA) is a county agency that promotes health and prevention services through community programs for low-income families. In a recent community needs assessment, OCHCA and six out of ten non-profit hospitals that serve the communities of OC identified diabetes and mental health as top priorities to address (OC Healthier Together, 2019). Findings from the assessment highlighted that Korean, Farsi, Arabic, and Spanish-speaking residents in North OC are less likely to seek a specialist for their mental health needs because of shame and stigma (Kaiser Permanente, 2019; OC Healthier Together, 2019). In addition, Buena Park, a city in North OC, was identified as one of the eight cities with higher hospitalization rates related to diabetes complications. For this reason, the principal investigator (PI) chose to implement the QI project in Buena Park.

The implementation site for this QI project was Korean Community Services (KCS), a federally qualified health center that OCHCA partially funds. The KCS center provides primary care and mental health services to predominantly Korean American families and the Korean immigrant community in Buena Park. The PI reached out to the administrative director of the KCS center to see if this QI project would potentially benefit both patients and HCPs. Information on the number of patients seen in practice for T2DM related psychological distress and HCPs who are currently providing CBT interventions to manage T2DM related psychological distress would have been helpful but was unavailable. However, the administrative director identified that many patients at the KCS center had T2DM and these patients would benefit from resources to manage psychological distress related to T2DM.

Intended Improvement

Project Purpose

Healthcare providers (HCPs) in primary care settings are well-situated to promote change, address concerns, and build a good rapport with their patients. According to a study, patients who believed their provider was aware of their health behaviors enabled them to trust their provider (Bardach & Schoenberg, 2018). The project focused on DRD and MDD; two specific psychological distresses commonly experienced by T2DM patients. The purpose of this quality improvement (QI) project was to increase the knowledge of HCPs on psychological distress related to T2DM and their intent to use or refer to CBT as a treatment in practice in the KCS center. Presentation effectiveness and barrier identification were assessed.

Project Question

This QI project aimed to answer the following question: Will an educational presentation given to HCPs at KCS about T2DM related psychological distress and CBT as a treatment impact their knowledge and increase their intent to utilize or refer to CBT as a tool to manage psychological distress in patients with T2DM?

Project Objectives

Objective 1: Assess HCPs' current knowledge, perception, and practices regarding CBT for the treatment of psychological distress in T2DM patients using a pretest.

Objective 2: Educate HCPs about psychological distress and CBT using a 20-minute asynchronous evidence-based presentation that reviews the effect of CBT on psychological distress related to T2DM.

Objective 3: Evaluate HCPs' knowledge, identify any barriers, and their intention to implement or refer to CBT as a tool to address psychological distress in T2DM patients using a posttest.

Theoretical Framework

The Transtheoretical Model

The transtheoretical model (TTM) developed by Prochaska and DiClemente, proposes that behavioral changes occur in individuals as they move through five stages: pre-contemplation, contemplation, preparation, action, and maintenance (Arafat et al., 2019). Each stage of change involves different variables, interventions, and processes that could increase an individual's motivation, ability, or readiness to progress to the next stage of change (Arafat et al., 2019). This model recognizes no "one size fits all" approach, and each individual, community, or organization needs programs tailored to their needs. It also highlights that the pathway to change is non-linear, and individuals have a high possibility to regress to previous stages. This change can be cyclical. The TTM was used for this QI project to understand existing barriers among HCPs and guide individuals to move through stages toward a sustained behavioral change. See Figure 1.

Stages of Change

Precontemplation Stage. The first stage is the pre-contemplation stage, which consists of individuals who have little or no intention to take action in the next six months (Velicer et al., 1998). HCPs at KCS who are in this stage may not be mindful of CBT and its benefits in treating psychological distress related to T2DM. HCPs may be under-informed of the positive effects of CBT and possibly be unaware of their patients' difficulty of living with or managing T2DM being a contributing factor to their psychological distress. Some HCPs at KCS might also be unmotivated to make intentional changes because they have lost confidence from previously failed attempts or fear discussing psychiatric issues, thinking it would inadvertently worsen matters (Clarke et al., 2016; Velicer et al., 1998). In addition, patients who perceive their HCPs as inattentive have low confidence in their HCPs and are likely to be non-compliant with treatment plans (Linetzky et al., 2016). HCPs label these patients as "difficult patients" (Tareen & Tareen, 2017; Wardian & Sun, 2014). When interactions with non-compliant T2DM patients are already challenging, HCPs at KCS may be more resistant to read, think, and discuss changing behaviors such as providing different treatment options such as CBT. Questions to ask HCPs at KCS who are in this stage are: "What are non-pharmacological treatments that you have offered to patients who have poor treatment adherence?" and "How difficult is it for you to discuss mental health issues with your patients?"

Contemplation Stage. The contemplation stage is the second stage where individuals have thought about the advantages and disadvantages of changing their behaviors (Velicer et al., 1998). In this project, these individuals refer to HCPs at KCS, who have intentions to make changes in the foreseeable future and are planned in the next six months (Velicer et al., 1998). However, when

HCPs are constantly weighing the costs and benefits involved in the process of change, procrastination and ambivalence could occur (Velicer et al., 1998). HCPs who already feel the pressure of time constraints in a hectic outpatient setting may not see the advantages of screening their patients for psychological distress and discuss CBT (Tareen & Tareen, 2017). Some HCPs at KCS might already have an existing evidence-based practice tool that they are using and see no benefit of learning or referring patients to this type of psychotherapy. For this stage, the goal is to reduce barriers. Questions that should be considered asking HCPs are: “What are the barriers that keep you from implementing or referring to CBT?” and “What might help you make a change at this time?”

Preparation. In the preparation stage, individuals are ready to make an intentional change and have planned out what actions to take in the next month (Velicer et al., 1998). HCPs at KCS who are in this stage of change may have studied CBT, examined the barriers in each patient, and had a good idea of who would most benefit from CBT. For example, in Siewchaisakul et al. (2020)’s study, physicians and nurses were able to encourage individuals towards smoking cessation if they were already in the contemplation and preparation stages. However, about 57% of the individuals in the preparation stage regressed to the pre-contemplation stage (Siewchaisakul et al., 2020). In addition, it was found that older adults were likely to take action if individuals had access to resources and were already in the preparation stage (Siewchaisakul et al., 2020). With that said, if appropriate resources and tools are given to HCPs at KCS in the preparation stage, a forward transition can be expected.

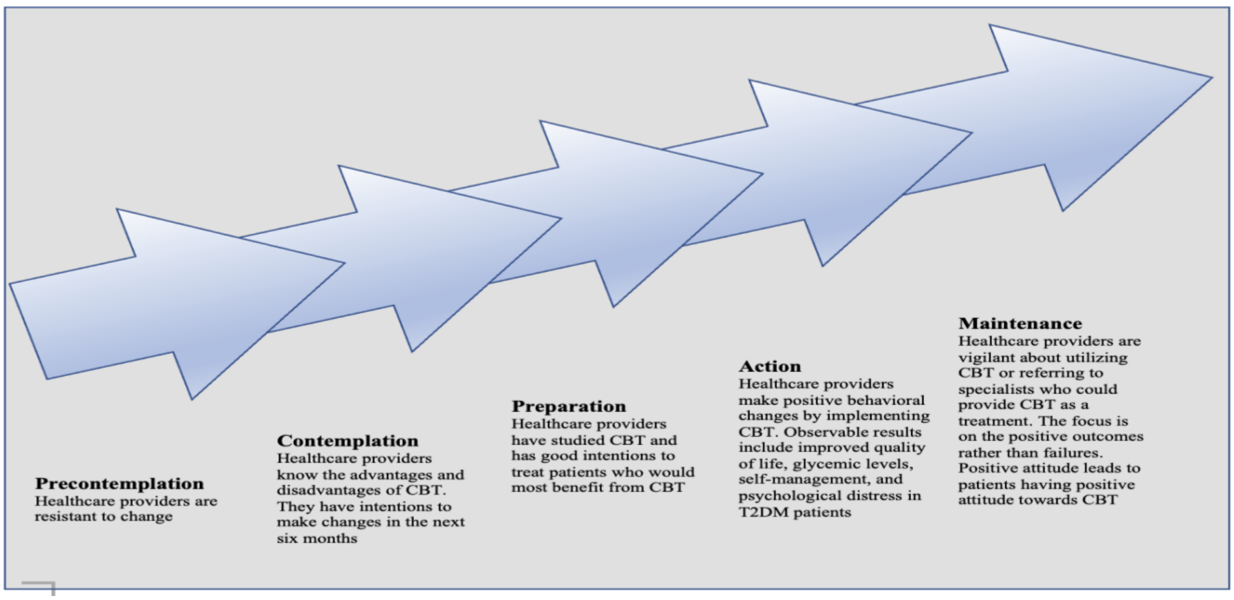
Action. In the action stage, HCPs at KCS are expected to have made observable changes and used CBT in every psychologically distressed T2DM patient within the past six months. HCPs see that the pros of implementing CBT outweigh the cons of not implementing it. The positive and observable behaviors include increased diabetes self-management education, improved glycemic control, self-efficacy, quality of life, improved psychological distress within T2DM patients, enhanced communicative skills that are easy for patients to understand their disease and engage with their physicians, and completion of CBT interventions. Preventing relapse is critical in this stage as it determines HCPs' risk of regression to the previous change stages (Velicer et al., 1998).

Maintenance. The maintenance stage consists of vigilant individuals practicing change and preventing relapse for six months or longer (Zimmerman et al., 2020; Velicer et al., 1998). However, individuals are likely to regress or repeat through the stages of change several times until the change is comfortable and well-established (Zimmerman et al., 2000). Recycling through the stages could be discouraging, but it is acknowledged as a natural and essential part of the change process (Ruggiero, 2000; Velicer et al., 1998). Part of successful maintenance includes HCPs at KCS returning to utilize or refer to CBT as a tool if they relapse. Focusing on the successful part of the change and acknowledging positive steps that individuals have achieved rather than focusing on failures can encourage a positive attitude towards behavior change (van Leer et al., 2007).

Identifying HCPs' position in the change process and readiness for change is vital to tailor interventions to their needs and skills (Zimmerman et al., 2000). TTM is to help individuals move forward through the different processes of change rather than just convincing them to think about changing their behaviors (Zimmerman et al., 2000). HCPs at KCS who are in the pre-contemplation or contemplation stages may benefit from interventions that increase their awareness of CBT as a tool to treat psychological distress in their T2DM patients. HCPs in the advanced stages of change would benefit from training sessions to improve their knowledge of utilizing CBT. For this project, participants are likely to be found in either the pre-contemplation or the contemplation stages of change.

Figure 1

The Transtheoretical Model (TTM)



Literature Synthesis

A literature search was conducted by utilizing electronic databases Clinical Key, Google Scholar, and PsycINFO. The review was geared towards understanding psychological distress or DRD's negative impact on T2DM patients' health outcomes. Using Clinical Key, the following keywords were used: "psychological distress," "depression," "cognitive behavioral therapy," and "type 2 diabetes"; research yielded 188 results. Articles were then refined using the following inclusion criteria: full text only, published within the last five years, randomized controlled trials, meta-analyses, and humans. This narrowed articles down to a total of twelve. Finally, all twelve articles were reviewed, and studies that did not mention keywords or focus on the treatment of psychological distress were excluded. The exclusion resulted in a total of three articles for selection.

Using Google Scholar, a search was conducted by using keywords “Cognitive Behavioral Intervention,” “depression,” and “type 2 diabetes” to find relevant articles; a total of 933 articles resulted. Unlike the Clinical Key database, Google Scholar had a limited section of inclusion criteria filters to select. First, results were restricted to articles published between “2016 to 2021.” Once the search criteria were further restricted to articles published within the last five years, a total of 531 articles were available. Upon further reading of the articles, 520 articles were eliminated as they were duplicates, abstracts did not fit the criteria, and were not targeted for an appropriate patient population. The exclusion resulted in a total of sixteen articles for review.

A third electronic database, PsycINFO, was used with the following keywords: “CBT,” “type 2 diabetes,” and “depression.” This search yielded a total of 33 articles but was further refined using the following inclusion criteria: publication date from 2016 to 2020 and humans.” Nine articles were available, but seven articles were found to be duplicates from previous Clinical Key and Google Scholar searches after screening the titles. Two articles remained, but one of the articles was not a full text. This article was electronically requested from another institution through the University of Arizona’s library. After successfully borrowing the article, the title and abstract were screened and were found to fit the criteria. Two articles from PsychINFO were selected for the literature review. See Appendix H for Flow Diagram.

The following sections identify and discuss four key themes found in the literature search. The four themes include 1) CBT Treatment for DRD in T2DM, 2) CBT Treatment for Mild-to-Moderate MDD, 3) Impact of Tailored CBT, and 4) Applicability of CBT**.**

CBT Treatment for DRD in T2DM

Patients who experience a psychosocial burden of living with diabetes have DRD (Cummings et al., 2019; Kanapathy & Bogle, 2019; Tunsuchart et al., 2020; Xu et al., 2020). Though MDD and DRD have overlapping components, a high level of DRD is closely linked to higher HbA1c levels, lower self-efficacy, poor self-management, and diabetes-related behaviors (Tunsuchart et al., 2020). Adults who reported experiencing high levels of DRD suffered from consequences of poor adherence to medication regimens and reduced self-management. Additionally, insulin users in T2DM and those who had difficulty controlling their blood sugar levels had higher baseline levels of DRD and worse glycemic control than in T2DM patients who did not. Thus, one-way DRD levels were reduced was by enabling patients to reach their in-target blood sugar levels (Tunsuchart et al., 2020).

Psychological treatments, specifically cognitive-behavioral interventions, can effectively decrease DRD and improve adherence to medical treatments compared to routine approaches (Alahyari et al., 2021; Noroozi et al., 2017; Tunsuchart et al. 2020). Literature review revealed that CBT interventions can be delivered as individual or group sessions and are practical ways to treat DRD in T2DM patients. Both approaches were successful in improving DRD and HbA1c levels in the experimental group compared to those receiving the usual care (Alayari et al., 2021;

de Groot et al., 2019; Lutes et al., 2020; Tunsuchart et al., 2020). In addition, participants with DRD, including those who reported uncontrollable blood sugar levels, benefited from CBT by working on problem-solving, interpersonal relationships, consumption behavior, and stress management with their therapists (Tunsuchart et al., 2020).

CBT Treatment for Mild-to-Moderate MDD

T2DM patients who suffer from long-term DRD, and worsened diabetes-related complications are at risk for developing MDD (Tunsuchart et al., 2020). Antidepressants are often used to reduce the symptoms of MDD in T2DM patients, but rational use and potential adverse effects of medication remain a challenge (Xu et al., 2020). Furthermore, patients prefer psychotherapy over pharmacotherapy, which points to using CBT (Xu et al., 2020).

CBT is widely used to treat MDD (Noroozi et al., 2017; Schmitt et al., 2017; Tunsuchart et al., 2020). CBT interventions provide a more significant reduction in mild-to-moderate depressive symptoms in T2DM adolescents and adults who have at baseline compared to those in control groups (Alahyari et al., 2021; Clark et al., 2019; Gulley et al., 2019; Shomaker et al., 2016; Tovote et al., 2017; Xu et al., 2020). In another study by de Groot et al. (2019), 66% of patients who had mild-to-moderate MDD and received CBT were in remission from MDD, while only 32% from the usual care group were in remission. Among participants who had moderate to severe MDD, no significant difference was reported in PHQ-9 scores between the CBT and the usual care groups (Gulley et al., 2019; Xu et al., 2020).

The literature review also examined the direct relationship between quality of life and MDD in T2DM patients. When MDD and DRD were both addressed with CBT, findings showed a small but positive effect on T2DM patients' quality of life (de Groot et al., 2019; Li et al., 2017). Conversely, quality of life in participants from the usual care group reported having little to no improvements (de Groot et al., 2019).

Impact of Tailored CBT

Broadening levels of practice requires continuing education and training, which are essential components for HCPs to provide treatment that patients desire. Through continuing education and training, HCPs are equipped with appropriate tools that provide flexibility to tailor treatments for their patients (de Groot, 2017). For example, HCPs who utilize tailored CBT rather than systematic approaches are effective in assisting T2DM patients in regulating glycemic control (Alahyari et al., 2021; Clarke et al., 2016; Cummings et al., 2019; Kanapathy & Bogle, 2019; Uchendu & Blake, 2016; Xu et al., 2020). In addition, CBT tailored to the severity of DRD significantly improved A1c as DRD improved (Lutes et al., 2020; Tunsuchart et al., 2019). The reason is, tailored CBT requires face-to-face sessions, which enables clinicians to provide patients with an individualized plan of care and focus on the following key components: behavioral experience, stress management, interpersonal strategy, and homework assignment (Yang et al., 2020). These CBT sessions include assignments such as changing maladaptive thinking, developing coping skills to deal with life stressors, self-monitoring, identifying fundamental beliefs, and receiving psychoeducation (Alahyari et al., 2021; Shomaker et al., 2016).

Interventions delivered and organized in group forms were found to be more effective in controlling glycemic levels than in individual approaches. Participants in group CBT (g-CBT) tend to experience improvements in short (6 months) to long-term (1 year) glycemic control (Alahayri et al., 2021; Alahyari et al., 2021; Uchendu & Blake, 2017; Xu et al., 2020). Schmitt et al. (2017) examined the effect of a diabetes-specific cognitive-behavioral group treatment vs. usual care in adults enrolled in the Diabetes Motivation Strengthening (DIAMOS) study. PHQ-9 scores in g-CBT improved as HbA1c levels started to improve, indicating that a more significant decline in depressive symptoms was significantly more able to reach in-target glycemic control than those receiving individual CBT sessions (Cummings et al., 2019; Schmitt et al., 2017). Another advantage of utilizing g-CBTs is the ability to see the effect of social influence on participants. T2DM patients in g-CBTs are more motivated to reach their daily target blood sugar levels (Noroozi et al., 2017; Yang et al., 2020).

Individual and g-CBTs have been proven to provide positive clinical effectiveness. However, these traditional face-to-face interventions are not sought out by patients because of stigma and concerns of treatment costs (Clarke et al., 2019; Cummings et al., 2019). Web-based CBT programs enabled patients and providers to overcome barriers in addressing mental health issues in T2DM (Newby et al., 2017). Studies also found that treatments delivered via the internet have been recognized to demonstrate comparable findings from diabetes-specific, face-to-face CBT interventions (Newby et al., 2017). Unlike traditional face-to-face CBT programs, self-monitoring web-based CBT programs such as myCompass are low-intensity treatments that lack diabetes-themed content and have limited evidence on HbA1c levels (Clarket et al., 2016; Cummings et al., 2019; Newby et al., 2017). However, patients who utilized web-based CBT programs effectively reduced MDD, comorbid anxiety, and DRD (Clarke et al., 2016; Newby et al., 2017). Although there is limited evidence on glucose control and mixed perception of web-based CBT programs, HCPs utilize this approach and expect improvements in patients' diabetes self-efficacy, self-confidence, acceptance of the disease, and reducing maladaptive perception (Clarke et al., 2016).

When referred to the TTM model, CBT is not a "one size fits all" approach for HCPs to treat T2DM related psychological distress. There are many forms and approaches of CBT that can be utilized to tailor to patients' needs. HCPs who can recognize patients' distress, reevaluate, and modify treatments based on their progress can promote better health outcomes. In addition, HCPs can empower patients to develop better lifestyle management behaviors.

Applicability of CBT

In the literature review, CBT was implemented in primary care settings and outpatient diabetes centers located in rural and urban cities of the US. CBT studies were also performed in primary care settings in Malaysia, Thailand, China, Australia, Iran, New Zealand, the United Kingdom, and Germany. Direct evidence suggests that patients cannot access care because mental health is viewed as a separate entity from primary care. DRD and MDD in most T2DM patients are treated in primary settings, but patients' access to treatments remains challenging (Li et al., 2017; Xu et al., 2020).

Li et al. (2017) and Clark et al. (2016) argue that web-based self-report CBT programs on mobile applications have more advantages than traditional CBT in locations where stigma still exists. A web-based CBT application such as *myCompass* was used among patients who were reluctant to seek psychological services based on existing barriers, including stigma, costs, and in remote areas (Clark et al., 2019; Li et al., 2017). However, as mentioned in the previous section, traditional face-to-face CBTs are much more tailored to patients' needs.

In the literature review, CBT interventions were led by primary care nurses, masters' and doctoral-level community mental health professionals, endocrinologists, nurse practitioners (NPs), psychologists, trained therapists, and HCPs (Alahyari et al., 2021; de Groot et al., 2019; Gulley et al., 2019; Tovote et al., 2017; Uchendu & Blake, 2016; Whitehead et al., 2016; Wroe et al., 2018). Findings suggest that CBT can be adopted and effectively utilized among various behavioral health professionals, including providers who have limited access to resources. In addition, with training and support, both 1:1 and g-CBT can apply to various communities and be delivered to T2DM patients with different levels of educational attainment (DeGroot et al., 2019; Kanapathy & Bogle, 2019; Tovote et al., 2017; Tunsuchart et al., 2020; Xu et al., 2020).

Strengths of Evidence

The quality and evidence levels of selected literature were examined using the Johns Hopkins nursing evidence-based practice. The strengths of the selected literature involved sixteen randomized controlled trials (RCTs), which included support for using CBT in settings other than outpatient psychiatric clinics. These RCTs are good quality quantitative studies that involve appropriate randomization, blinding, description of dropouts and exclusion criteria, confidence intervals, and power analysis. Studies involved diversity in the participants who were selected to treat psychological distress related to T2DM. In addition, CBT interventions in the articles involved the participation of patients in various countries, real-world settings, different age groups and were led by different HCPs. This provides strong evidence that CBT can be widely used to tailor to the population it serves, findings can be replicated, and can be applied by HCPs in a patient care setting such as KCS.

Another strength was found in three articles that evaluated glycemic control and self-management outcomes in patients who received CBT through web-based applications. This design increased accessibility to care for patients and HCPs, who deal with time constraints and barriers to meeting their needs (Clarke et al., 2016; Cummings et al., 2019; Newby et al., 2017). Other selected literature included two systematic reviews and two meta-analyses of RCTs, all of which were consistent in their findings with previous studies.

Weakness of Evidence

RCTs are considered a gold standard for research and are known to yield high-quality evidence; however, the inclusion of small sample sizes makes it difficult for generated conclusions to be applied to specific populations (Bhide et al., 2018). In this literature review small study samples were recruited from limited racial groups and from only one controlled environment (Cummings et al., 2019; Uchendu & Blake, 2016; Wang et al., 2017; Wroe et al., 2019). For this reason, this limits findings from applying to the Korean Americans and immigrants at primary care settings, including KCS.

Another weakness that was found in the three articles was related to their study designs. Tunsuchart et al. (2020)'s study was a quasi-experimental design where participants were purposefully recruited and lacked randomization. Results have been affected by unknown confounding variables with sampling bias because participants were enrolled from the same diabetes clinic. Clarke et al. (2016) and de Groot et al. (2017)'s studies were given the weakest and lowest level of evidence on the hierarchy of research because they were a case series and single-arm comparative study, respectively. Both articles had no control of confounding factors because they involved researchers' bias in selecting participants, type I errors, dropout attrition, and lacked the use of control groups. Although these findings cannot be generalized among the T2DM population, results demonstrated that HCPs could utilize CBT in small study samples and at one implementation site.

Gaps and Limitations

CBT effectively manages functional thoughts, negative behaviors, psychiatric comorbidities like MDD, and developing coping skills to deal with daily stressors (Uchendu & Blake, 2016). However, further work is needed to examine the use and efficacy of CBT in larger sample sizes. In addition, more studies are needed to understand the use of CBT on DRD and determine which delivery method of CBT can impact all genders of T2DM patients. A significant limitation found in the literature synthesis involves few studies examining CBT's efficacy as a monotherapy to treat psychological distress in T2DM patients. Another limitation was the bias of the PI, who believes that non-pharmacological interventions should be used before prescribing pharmacological treatments.

METHODS

Project Design

This DNP project utilized a framework of quality improvement (QI) to implement an educational intervention that aimed to improve HCPs' knowledge and intent of utilizing CBT or referring to specialists who could provide CBT to psychologically distressed T2DM patients. Pre- and post-intervention surveys were completed by HCPs to understand if the intervention led to measurable improvements, as evidenced by increased CBT knowledge and intent to use or refer to CBT to help improve DRD and depressive symptoms. In addition, the surveys were included in this study design to understand participants' stages of change regarding TTM.

Model for Improvement

This QI project utilized the Model for Improvement (MOI) as a framework to test the implementation of the CBT for HCPs to treat psychological distress in T2DM. The MOI addressed three fundamental questions to understand the accelerating improvement in organizations. The three fundamental questions focused on understanding what the project aims to accomplish, measuring the change and improvement, and implementing changes that would lead to improvement (IHI, n.d.). This QI project aimed to 1) educate HCPs about CBT and psychological distress with a 20-minute online asynchronous presentation, 2) collect pre-and posttests and compare results of HCPs' knowledge of CBT, psychological distress related to T2DM, and intent to utilize or refer CBT as a tool to treat T2DM related psychological distress, 3) identify barriers at KCS to integrate CBT in practice. The pre-and posttest results were implemented to provide quantifiable measures to assess change in HCPs' knowledge of CBT and the perception towards implementing CBT as a practice. This project's expected change was to increase HCPs' knowledge of psychological distress related to T2DM and CBT as a treatment option for psychologically distressed T2DM patients, an insight of the effectiveness of the educational presentation, and an assessment of barriers that exist among HCPs at KCS.

The change in HCPs' knowledge and intent to adopt CBT were tested and analyzed through a four-step cycle called plan-do-study-act (PDSA). In the first step of the PDSA cycle, "Plan," the PI developed an asynchronous PowerPoint presentation through an online platform called Qualtrics. This presentation aimed to educate HCPs about the importance of addressing psychological distress in T2DM patients and using CBT as a treatment for T2DM related psychological distress. Another objective was to increase HCPs' intent to utilize or refer to CBT as a treatment option for psychological distress in T2DM patients. The expectation was that this educational intervention would increase in HCPs' knowledge of CBT and T2DM related psychological distress, increase PCPs' willingness to move through stages of change regarding TTM by implementing CBT in practice or refer to specialists who can offer CBT, and help HCPs to identify barriers that need to be addressed. Participants were recruited based on their inclusion criteria, availability, and access to the internet and their work emails.

The second stage of the PDSA, "Do," consisted of carrying out the plan and documenting observations, including unexpected problems or modifications during the implementation process (IHI, n.d.). Some examples of these unexpected problems include skipped questions during pre-and posttests and unfinished components of the implementation. The next stage of the PDSA is "Study," where predicted outcomes are compared to the actual outcomes and consists of answering the question, "Did the implemented change result in an improvement?" Again, the actual outcomes were collected through pre-and posttests, which helped to assess HCPs' knowledge of CBT and T2DM and intention to utilize their acquired knowledge in practice or refer to CBT. Finally, based on the finalized data analysis, the PI entered the "Act" stage, where the implementation was determined to be adoptable, adaptable, or abandoned for future QI projects and research. This phase also enabled the PI to reflect on possible modifications that could be made to plan for the next cycle of change.

Setting and Stakeholders

Setting

KCS is a non-profit organization that provides an integrated healthcare service to Korean Americans and Korean immigrants but serves patients of all ethnicities and even accepts uninsured patients. Due to the current COVID-19 pandemic, the PI did not provide an in-person education at the KCS center as most providers were utilizing telemedicine. Therefore, the DNP project intervention took place on Qualtrics, using an online platform for participants to join from various locations and complete all implementation components. KCS is in Buena Park, California. The following information was obtained from the US Census Bureau. In 2019, Buena Park had a population of 80,530 residents with a median age of 36.3, and the median household income was $78,932. The population of Buena Park is 48.4% White, 37.9% Hispanic or Latino, and 32.4% Asian. The poverty rate is 12.3%, with females between ages 35 and 44 making up the largest demographic living in poverty.

Stakeholders

The key stakeholders in this project included the administrative director, HCPs, including mental health providers with a specialty in psychiatry and T2DM patients. The change champion was a psychiatric mental health nurse practitioner who currently works at the KCS center and can influence the attitudes and behaviors of other providers at this facility. The administrative director provided the authorization for PI to implement the QI project at the clinic and was the point of contact between the PI and the providers. She played a role in influencing the way staff members participated. A total of five HCPs were recruited as participants. Their role in this QI project was to participate in the educational session and complete both pre-and posttest surveys.

Patients were also another critical stakeholder in this project as they are the population to most benefit from this QI project implementation.

Planning the Intervention

The PI received authorization from the administrative director of KCS to implement the QI project. The presentation was submitted to experts knowledgeable about CBT and psychological distress, including MDD and DRD. Once feedback was received, the PowerPoint was edited to provide evidence-based education about CBT on psychological distress related to T2DM. Participants were provided with a website link in their work email that directed them to an online platform called Qualtrics. By clicking on this website link, participants read the project disclosure form, the list of the QI project's purpose and components, and the anticipated time required to complete each section.

The goals of the pretest survey were to collect HCPs' knowledge of CBT as a treatment for T2DM related psychological distress, knowledge of psychological distress in T2DM patients, and perception of utilizing or referring to CBT. After completing the pretest (Appendix D), participants were able to click forward to a page to watch an educational presentation video embedded on the Qualtrics website. The educational component of the intervention was a pre-recorded PowerPoint presentation via Panopto, an online video platform that took approximately 20-minutes to complete watching (Appendix E). The presentation content included information on psychological distress among T2DM patients, recent peer-reviewed articles regarding CBT, and its impact on T2DM related psychological distress. Upon completion of the PowerPoint presentation, participants could click on a button to proceed and complete a posttest survey

(Appendix D). This posttest survey had similar components found in the pretest survey but with two additional questions that helped examine barriers to integrating CBT in practice.

Two days prior to the opening date of the intervention, a recruitment email was sent to participants' work emails. On the day the intervention opened, the first reminder email was sent to notify participants that the URL link was active and accessible. Participants had a two-week window to complete all components of the intervention. A week before the intervention link expired, the second reminder email was sent to participants who had not yet completed the surveys and presentation. This email notified the participants that they had one week to complete the intervention by an identified date. Once the deadline was reached, the link was no longer be active to access. See Appendix F for the project timeline.

Participants and Recruitment

A convenience sample of participants was recruited for this QI project. The participants were recruited based on inclusion criteria: a) English speaking, b) providing care for patients at the KCS center, c) access to his or her work email, and d) access to the internet. Participants for this QI project were recruited with the help of the administrative director, who sent the recruitment email on behalf of the PI. This recruitment email was sent to participants' work emails. The email briefly discussed the project's purpose, participant inclusion criteria, and PI's contact information for more information or questions. Interested participants were able to move forward with participation in the project by clicking on the Qualtrics link provided in the email. The goal for participation was to receive a 100% response rate from all five participants.

Consent and Ethical Considerations

The project was reviewed and approved by the Institutional Review Board through the University of Arizona before recruiting participants and collecting data. Reasonable ethical considerations must be addressed in QI projects to ensure the appropriate use of resources and protect patient privacy and safety (Fiscella et al., 2015). Participants were provided with a disclosure form that stated the QI's purpose, significance, and expectations. Participants were given ample time to review and give consent to participate in the project voluntarily. The disclosure form had a statement that read, "I have read the terms, and I agree to participate." Participants had the option to choose "yes" or "no." Participants who selected "yes" were able to proceed to the pretest survey. Participants who selected "no" were unable to move forward and the survey ended. See Appendix B for the disclosure form.

The protection of the participants was a top priority for this QI project. The following three ethical principles defined by the APA were used throughout the project's planning, implementation, and evaluation: 1) respect for people's rights and dignity, 2) beneficence and 3) justice. The principle of respect for people's rights and dignity involves being aware of individual differences, providing confidentiality, and respecting individuals' rights to make their own decisions (APA, 2017). The project disclosure stated that participants had the option to withdraw at any stage of the intervention if desired, and their refusal to drop out would not result in a penalty. Confidentiality was assured and maintained by not using any identifiable information. In addition, no personal data was collected. Participants' completed surveys were returned anonymously, and survey results were password protected on a personal computer that only the PI could access.

The principle of beneficence ensures all possible measures were taken to reduce the risk of harm to participants (APA, 2017). The project met this principle by not involving patients with mental health problems but instead offering education to HCPs who can use clinical judgment to deliver the best practice to their patients. The educational intervention included information on CBT as an evidence-based practice and its benefits in treating T2DM psychological distress. Justice refers to distributing benefits, resources, and risks equally and fairly (APA, 2017). This project maintained justice by treating participants equally, providing an educational presentation to all interested participants, and the opportunity to share their opinions in the surveys.

Data Collection

This QI project recruited participants with the help of the KCS administrative director, who forwarded the PI's recruitment email to all the HCPs at KCS. Participants interested in participating in the project were able to directly access Qualtrics, a web-based survey, through a link provided in the email. Through Qualtrics, quantitative data were collected from participants before and after the educational component of the intervention. Both the 7-item pretest survey and 9-item posttest surveys consisted of questions answered on a 5-point Likert scale and submitted anonymously. These surveys measured participants' 1) knowledge of psychological distress among T2DM patients, 2) knowledge of CBT and its benefits to treat T2DM patients, and 3) intent to use or refer CBT for T2DM related psychological distress. Few of the responses to the pre-and posttest surveys correlated with the stages of change from the TTM. Comparing results from the pre and posttest surveys revealed whether each participant had moved in stages of change after the educational intervention and if the type of intervention was appropriate for participants' stage of change.

The 9-item posttest survey had two questions that examined participants' thoughts on the efficacy of the presentation and identified barriers that affect the integration of CBT in practice. Upon completion of the project, the PI deleted the contact information of all participants and information.

Data Analysis

Descriptive statistics were utilized to summarize the data collected from the surveys. Responses collected from the surveys were evaluated using descriptive data. Data collected from both pre-and posttest surveys were evaluated, scored based on the responses, and presented in percentages. In addition, the descriptive information collected from the surveys was examined to see if the educational intervention impacted HCPs' knowledge and intent to utilize CBT in practice. The examination of changes in responses from both surveys was completed by using descriptive data. All data were displayed in bar graphs and tables using Excel. Open-ended questions were evaluated and paraphrased within the findings sections while attempting to identify common themes. After the completion of the project, findings were presented to KCS. Furthermore, this approach to delivering education may be helpful for KCS and its partner facilities to explore for future QI.

RESULTS

Outcomes

The project's purpose was met by increasing HCPs' knowledge of psychological distress related to T2DM and their intent to use or refer to CBT as a treatment in practice at KCS. Thus, this project answered the question: Will an educational presentation given to HCPs at KCS about T2DM related psychological distress and CBT as a treatment impact their knowledge and increase their intent to utilize or refer to CBT as a tool to manage psychological distress in patients with T2DM? The 20-minute asynchronous education increased knowledge of all five HCPs, and all 100% of the participants reported that they were extremely likely to utilize or refer to CBT as a treatment option at KCS.

The first objective was achieved by assessing HCPs' current knowledge, perception, and practices regarding CBT for treating psychological distress in T2DM patients using a pretest survey. The second objective was achieved by educating HCPs about psychological distress and CBT using a 20-minute asynchronous evidence-based practice presentation on the effect of CBT on psychological distress related to T2DM. Finally, the third objective was achieved by evaluating HCPs' knowledge and intentions and identifying barriers to implementing or referring to CBT as a tool to address psychological distress in T2DM patients using a posttest survey. The project question was answered by achieving these objectives, indicating that the educational intervention positively impacted knowledge, and increased the likelihood of utilizing or referring to CBT.

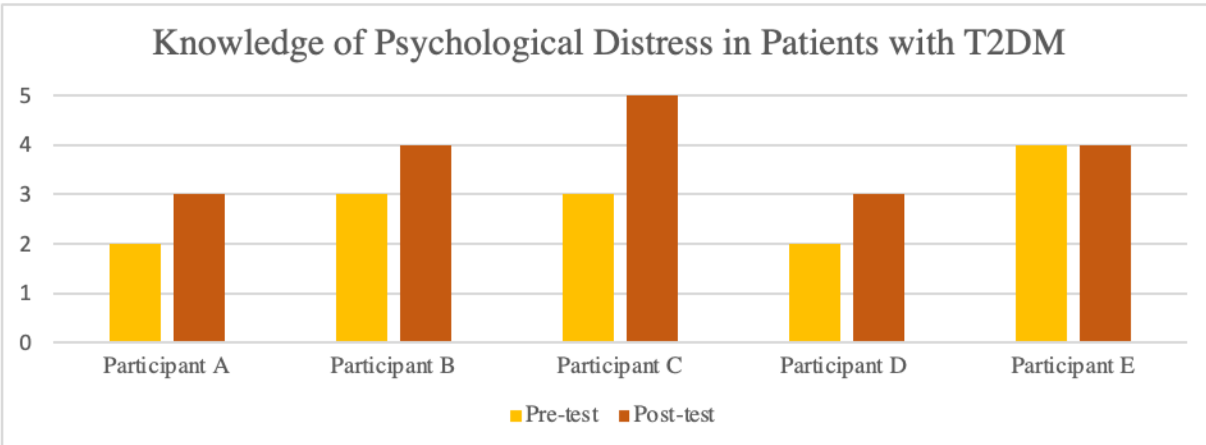
The administrative director at KCS sent emails to five providers, all of whom met the inclusion criteria, which included English speaking, providing care for patients at the KCS center, having a work email, and having access to the internet. Five out of five providers consented and participated, giving a 100% initial response rate. As a result, information obtained from all five participants (n= 5) was used for the final data analysis. Of the five participants, one was an MD, two were family nurse practitioners, and two were psychiatric mental health nurse practitioners (PMHNPs).

Data collected with the pre-and posttest surveys were utilized. The surveys contained questions that assessed participants': 1) perceived knowledge level of T2DM related psychological distress, 2) perceived knowledge level of CBT in treating T2DM related psychological distress, 3) knowledge of CBT, DRD, and MDD, 4) perception of utilizing or referring to CBT as a treatment, and 5) intention to utilize or refer to CBT to treat T2DM related psychological distress in practice. Providers' knowledge and perception were measured with 5-point Likert scale questions, which are as follows: 1= Not at all knowledgeable, 2= Slightly knowledgeable, 3= Moderately knowledgeable, 4= Very knowledgeable, and 5= Extremely knowledgeable.

From the pretest survey, *question 1* asked participants about their perceived knowledge of psychological distress in a patient with T2DM. As seen in Figure 2, common answers were "slightly knowledgeable" (40%), "moderately knowledgeable" (40%), and "very knowledgeable" (20%). After the completion of the educational video, participants responded to the same questions on the posttest survey. Results showed that 80% of the participants demonstrated an increase in their perceived knowledge of psychological distress related to T2DM.

Figure 2

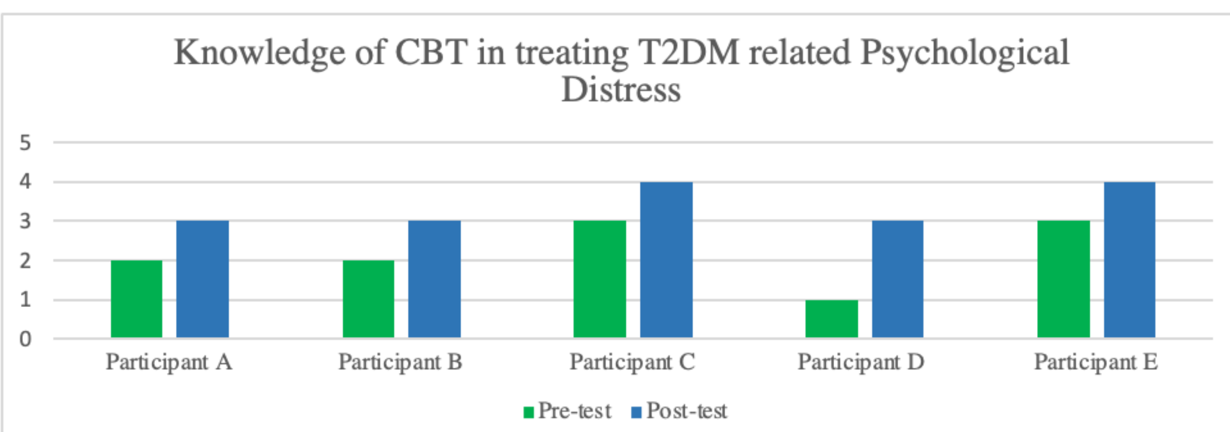
Knowledge of Psychological Distress in Patients with T2DM



Using the same Likert scale, *question 2* was asked to examine HCPs' perceived knowledge of CBT in treating T2DM related psychological distress. As seen in Figure 3, 20% of the participants were "not at all knowledgeable," 40% were "slightly knowledgeable," and 40% reported "moderately knowledgeable" before the intervention. However, all participants (100%) responded having a higher perception and felt more knowledgeable after the intervention.

Figure 3

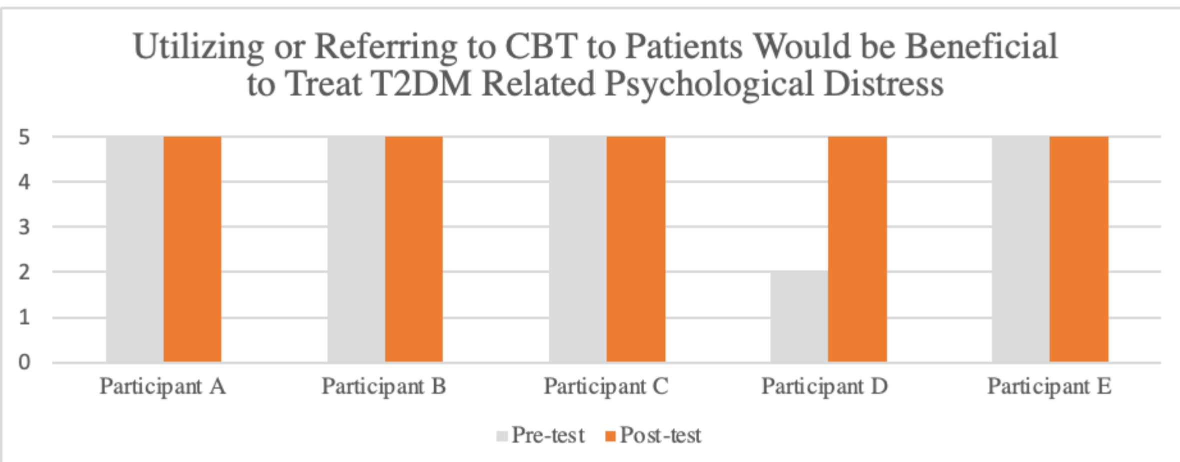
Knowledge of CBT in Treating T2DM Related Psychological Distress



Question 6 asked participants to select an answer based on a 5-point Likert scale (1= Strongly disagree, 2= Somewhat disagree, 3= Neither agree nor disagree, 4= Somewhat agree, and 5= Strongly agree) that best demonstrates their perception of utilizing or referring to CBT to benefit their patients who have T2DM related psychological distress. According to the posttest survey, all (100%) participants strongly agreed that utilizing or referring to CBT would be beneficial to treat T2DM related psychological distress**.** See Figure 4.

Figure 4

Utilizing or Referring to CBT to Patients Would Be Beneficial to Treat T2DM Related Psychological Distress



The effectiveness of the format and delivery of the educational intervention was analyzed based on the test scores for questions regarding the content. *Questions 3,4,* and *5* asked participants to fill in the blanks. *Question 3* asked, "(*blank)* out of 5 individuals with T2DM suffer from major depressive disorder." *Question 4* asked, "Addressing major depressive disorder and diabetes-related distress (DRD) in T2DM patients can improve (*blank*)." *Question 5* asked, "CBT interventions can address *(blank)* in adolescents and adults with T2DM." Table 1 shows the mean test scores and differences for the pretests and posttests. Only 40% of the participants answered *question 3* correctly in the pretest survey and demonstrated a 50% decrease after the intervention. All 100% of the participants answered *question 4* correctly on both the pre-and posttest surveys, giving a mean difference of 0%. A 66.6% increase was seen in the pre-and posttest scores for *question 5.*

Table 1

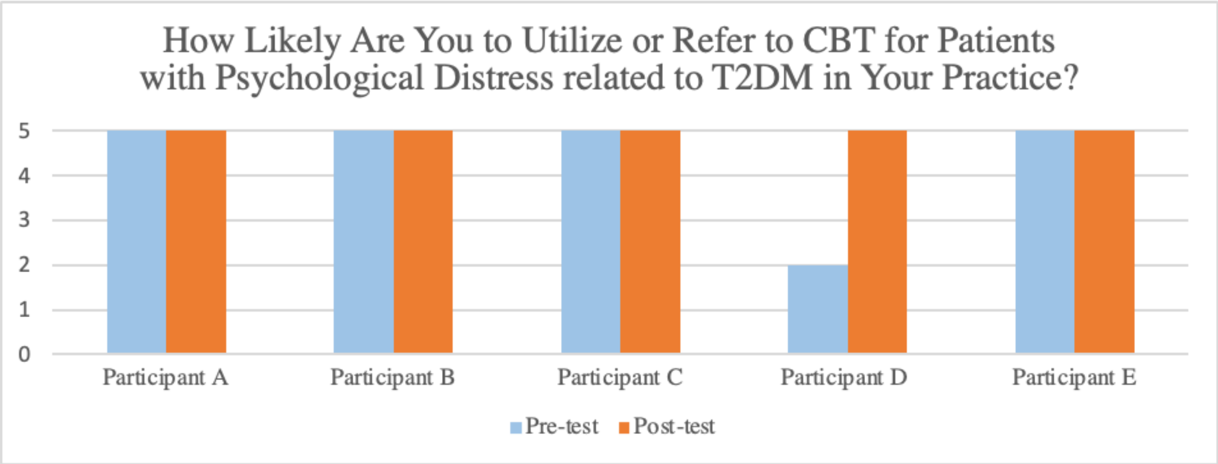
Knowledge of MDD, DRD, and CBT

Question Number	Pretest Score	Posttest Score	Difference	Increase/Decrease %
3	40%	20%	-20%	50% decrease
4	100%	100%	0%	0%
5	60%	100%	40%	66.6% increase

Data collected post-intervention was used to assess providers' intentions to implement the evidence-based intervention in their practice. *Question 7* was answered on a 5-point Likert scale, with each answer corresponding to the stage of change in the transtheoretical model. The answer options are as follows: 1= pre-contemplation/extremely unlikely, 2= contemplation/somewhat likely, 3= preparation/likely, 4= action/very likely, and 5= maintenance/extremely likely. A positive outcome in participants' answers for the posttest survey indicated individuals' readiness or motivation to advance to the next stage of change. All (100%) participants reported were "extremely likely" to utilize or refer to CBT to treat patients with psychological distress related to T2DM in their practice. See Figure 5.

Figure 5

How Likely Are You to Utilize or Refer to CBT for Patients with Psychological Distress Related to T2DM in Your Practice?



In the free-text responses, participants identified barriers that prevent them from utilizing CBT in their practice. Participants reported that the following were barriers to utilizing CBT in practice: 1) the shortage of therapists, 2) little to no training on how to use CBT in practice, 3) patients declining CBT, and 4) difficulty delivering CBT through telehealth. The free-text responses enabled participants to provide suggestions and to comment on their experience with the presentation format. Three participants mentioned that the educational video was "all helpful," one participant answered, "role-play of how to use CBT in practice would be helpful," and one participant answered, "I will skip this answer."

DISCUSSION

Summary

The high prevalence of T2DM related psychological distress is a growing concern and requires a collaborative approach for management. Although available research demonstrates CBT as a gold standard for therapy and promotes positive health outcomes in patients with

T2DM related psychological distress, there appears to be a knowledge gap among HCPs. This QI project implemented an asynchronous educational intervention about CBT and T2DM related psychological distress. The project was implemented virtually, where HCPs watched an educational presentation and completed pre-and posttest surveys from a remote location. The goal of the asynchronous presentation was to increase HCPs' knowledge about psychological distress related to T2DM and CBT, which is a nonpharmacological treatment option offered to this patient population. In addition, the educational presentation was used to improve HCPs' intention to utilize or refer to CBT to their patients with T2DM related psychological distress.

Encouraging key findings were found from the post-survey, which included: 1) improvement in providers' knowledge and perception of T2DM related psychological distress and CBT, 2) relatively high likelihood to utilize or refer CBT to treat patients with T2DM related psychological distress in practice, 3) awareness of barriers that exist in their current practice, and 4) HCPs finding the presentation helpful. Additionally, the outcomes of this QI project indicated that implementing an asynchronous presentation was a practical approach and could help HCPs understand the importance of their role in treating patients with T2DM related psychological distress.

Interpretation

In accordance with Prochaska and DiClemente's (1983) TTM, the 5-point Likert responses to *Question 7* corresponded to the stages of change. Interestingly, only 20% of the HCPs were in the contemplation stage, and 80% were in the maintenance stage before the intervention. One HCP in the contemplation stage was most likely aware of the problem of T2DM related psychological distress but unaware of the benefits of CBT and unsure how to utilize it. In addition, following the educational intervention, this individual demonstrated a forward shift to the maintenance stage, suggesting that the participant is highly ready to implement or refer CBT to patients and maintain the behavioral change. The 80% of the HCPs in the maintenance stage remained in the same stage after the intervention, suggesting that advanced knowledge of CBT was associated with higher readiness to utilize and refer to CBT and could maintain the behavioral change.

Implications

Practice

The findings from this QI project were consistent with previous findings that lack of knowledge, resources, and support could delay treatments for patients' mental health problems (Owens-Gary et al., 2019). For example, two out of five HCPs were unaware of CBT as a treatment modality for T2DM patients with mild-to-moderate depression. However, when HCPs were provided with appropriate training and education, all five participants were *extremely likely* to utilize or refer to CBT in practice routine management of T2DM patients. This finding indicates that the positive change in HCPs' perception and motivation aligned with evidence-based practice recommendations. Results also suggest that provider education is essential and can improve practice.

Continuing education and training for HCPs are vital to improving practice and for change to be sustainable. Some barriers to sustainability include lack of resources, including psychotherapists to refer patients to CBT sessions, patients' preference to utilize telehealth instead of traditional in-person appointments, patients' refusal for CBT, and HCPs losing confidence to discuss psychiatric issues with T2DM patients. However, this study has shown that perceived barriers did not impact HCPs overall willingness to utilize or refer to CBT at KCS.

Investigators who wish to pursue ongoing practice change in the future could use this asynchronous format to deliver education and utilize surveys to assess HCPs' readiness to adopt a CBT technique. Additionally, motivational interviewing could be integrated into the surveys to investigate additional barriers or resistance that HCPs encounter.

Education

Based on the responses from HCPs, the project demonstrated that HCPs are educated on the topic of T2DM related psychological distress and CBT as a treatment option but were only *somewhat knowledgeable* or *moderately knowledgeable.* PMHNPs' foundation in education and training enables them to address a full range of mental health services, including prescribing psychotropics and offering psychotherapy, including CBT. It is possible that the HCPs who had the least amount of training and knowledge on the content were family nurse practitioners or the MD. Despite the education gap, results showed that well-informed HCPs were willing to leverage CBT skills and knowledge to optimize their patients' health outcomes. Incorporating activities to role-play or practice specific CBT techniques in future educational implementation may benefit HCPs.

Research

Further research is needed to determine if educating HCPs on the importance of CBT could increase providers' intent to utilize or refer this treatment modality to manage T2DM related psychological distress. Based on what was learned from this project, the next step in the research on this topic would be to examine HCPs' readiness to receive CBT training to T2DM related psychological distress. A recommendation for future research includes replicating this QI project in the other outpatient settings within this practice where the PI could monitor HCPs' outcomes and actual referrals to CBT.

Policy

Currently, marriage and family therapists (MFTs) and social workers at KCS are only providing CBT. The great demand for counseling and psychotherapy has increased high levels of burnout, critical shortage, and patients on months-long waitlists. An action that may increase use and referral to CBT at KCS includes allotting enough time to offer CBT, ongoing training, and assistance to adapt the intervention to existing routines. This project also implies that education about CBT as a tool to treat T2DM related psychological distress can improve knowledge and perception of other HCPs in varied settings. This education delivery could influence other HCPs' to utilize this treatment modality.

Strengths and Limitations

The QI project required no cost in preparation and was easily implemented using an online format despite the COVID-19 pandemic. The asynchronous delivery format was a strength of the project because it provided flexibility for HCPs to access the intervention and complete it at their convenience. HCPs were also able to participate from a remote location that did not compromise their health and safety. Additionally, all (100%) of the HCPs participated in the project, and the majority reported having a positive experience.

Some limitations may have impacted the study. This QI project included only one location of KCS. Another potential limitation is the wording of *question* 7 from both pre-and posttest surveys. The response options were designed to correlate to the stages of change from the TTM but may not have been an accurate representation of patients' readiness for behavioral change. The positive shift from post-intervention only suggests an increase in the individual's motivation to utilize or refer to CBT in practice. Further study is needed to understand which stage of change HCPs reside in and whether observable changes are made after the educational intervention.

Another limitation of this study was the lack of a survey of HCPs' understanding of behavioral acculturations, barriers to access mental health, and health disparities that Korean immigrants experience. For this reason, findings may or may not have been influenced by an unexamined cultural response bias among HCPs. Future research should consider educating providers on how to provide a culturally and linguistically appropriate mental health service for Korean immigrants at KCS. For example, creating an open forum for HCPs to collaborate and discuss the health concerns of Korean immigrants can increase cultural sensitivity and the need for tailored CBT at KCS.

DNP Essentials Addressed

The American Association of Colleges of Nursing (AACN) outlines clinical competencies, or Doctoral Nursing Practice (DNP) Essentials, to prepare doctoral nurses for advanced practice nursing practice roles (American Association of Colleges of Nursing [AACN], 2006). This DNP project addresses three foundational essentials: *DNP Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking, DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice,* and *DNP Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health.*

DNP Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking

This essential focuses on improving patients and community needs through practical strategies and sustaining changes at an organizational and systematic level (AACN, 2006). The PI was able to integrate Essential II by identifying a problem in the community of Buena Park, which was affecting the health outcomes and safety of patients at the implementation site. The PI delivered practice initiatives and ensured accountability for quality patient care using an educational intervention at KCS. This educational intervention was cost-effective and led with advanced communication skills.

DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

This essential states that doctoral-prepared nurse practitioners require competent research skills and the application of scholarship to integrate new knowledge into practice and solve problems (AACN, 2006). The PI fulfilled this essential by utilizing information technology and research methods to research new knowledge, appraise existing literature, and design the best evidence-based intervention for the HCPs. Through this method, collected data studied trends and outcomes in HCPs' knowledge and perception and shared findings to KCS.

DNP Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health

This essential states that doctoral-prepared nurse practitioners must engage in leadership that promotes health and prevents diseases in individuals and their families (AACN, 2006). The PI analyzed the impact of T2DM and the growing concern of T2DM psychological distress that burdens the health status of Northern Orange County and the US. The PI implemented an intervention that assessed HCPs' knowledge of T2DM related psychological distress and CBT, provided education on the treatment effects of CBT for T2DM related psychological distress, and assessed knowledge of the intervention. The goal of this intervention was to facilitate change by promoting clinical prevention and population health services at an individual, aggregate, and population level. Concepts such as health promotion, evidence-based recommendations, determinants of health, and cultural diversity were integrated into the content.

Conclusions

This DNP project successfully provided education to HCPs on the importance of utilizing or referring to cognitive behavioral therapy (CBT) as a treatment for type 2 diabetes-related psychological distress. The outcomes of this DNP project reinforce the importance of prioritizing education for HCPs to increase knowledge of CBT and psychological distress in T2DM patients and HCPs' intent to utilize or refer to CBT as a treatment. This educational intervention was well-received by the HCPs, and 100% of the participants demonstrated an improvement in their knowledge and perception of CBT. This project also sheds light on the barriers from integrating CBT into practice at the KCS center and could help determine the PI's next steps to encourage HCPs to sustain in the maintenance stage of change and prevent regression.

Plan for Sustainability

Sustainability relies heavily on maintaining skilled, knowledgeable, and motivated staff to promote health interventions regardless of ever-changing situations (Herlitz et al., 2020). Additionally, the work of intervention champions and cost are factors that promote sustainability. This project utilized a viable online platform and required no cost to implement, disseminate, monitor, and evaluate. HCPs were given access to download the PowerPoint presentation and resources that listed practitioners and therapists for CBT referrals to provide ongoing support. The unique delivery approach could be used for future QI projects and implement CBT and T2DM related distress education among HCPs at multiple KCS campuses. In addition, recruiting more participants with expertise could promote awareness, prevention, and management of T2DM patients with psychological distress.

Plan for Dissemination

The results from the QI project will be disseminated to all the HCPs during an informal team meeting using an online platform called, Zoom. During this meeting, an executive summary will be presented using a PowerPoint presentation. Dissemination will also occur through future submission for the Western Institute of Nursing's (WIN) annual nursing research conference.

Funding

A free service called Qualtrics was used throughout the implementation process to disseminate pre-and posttest surveys and the asynchronous PowerPoint presentation. Therefore, no cost was associated with the QI project, and the PI did not receive any funding.

APPENDIX A:

SITE APPROVAL/ THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD DETERMINATION LETTER

Korean Community Services
7212 Orangethorpe Ave. Suite 9A
Buena Park, CA 90621

Date 7/22/21

Korean Community Services
7212 Orangethorpe Ave. Suite 9A
Buena Park, CA 90621

Please note that Ms. Esther Yoonhee Choi, UA Doctor of Nursing Practice student, has permission of Korean Community Services to conduct a quality improvement project at our facility for her project, "Educating Providers on Cognitive Behavioral Therapy to Treat Type 2 Diabetes-Related Psychological Distress."

Ms. Choi will conduct a survey of healthcare providers at Korean Community Services. She will recruit providers through email. The email will provide a description of the project, what they will be asked to do, the time involved, and a link to the online survey. Ms. Choi's activities will be completed by *October 24, 2021*.

Ms. Choi has agreed to provide my office with a copy of the University of Arizona Determination before she recruits participants. She will also present aggregate results to the providers upon request.

If there are any questions, please contact our office.

Signed,

AnnaK

Administrative Director of Korean Community Services

THE UNIVERSITY OF ARIZONA
Research, Discovery & Innovation

Human Subjects Protection Program

1618 E. Helen St.
P.O.Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
http://rgw.arizona.edu/compliance/home

Date:	August 16, 2021
Principal Investigator:	Esther Yoonhee Choi
Protocol Number:	2108127544
Protocol Title:	EDUCATING PROVIDERS ON COGNITIVE BEHAVIORAL THERAPY TO TREAT TYPE 2 DIABETES-RELATED PSYCHOLOGICAL DISTRESS
Determination:	Human Subjects Review not Required

Documents Reviewed Concurrently:

Data Collection Tools: *Pre-and Post-test Surveys.docx*
HSPP Forms/Correspondence: *Choi_Determination of Human Research 1.pdf*
Informed Consent/PHI Forms: *Disclosure Form edited.docx*
Other Approvals and Authorizations: *Advisor Confirmation Email (4).pdf*
Other Approvals and Authorizations: *Approval Letter- Korean Community Services (1).pdf*
Participant Material: *CHOI_CBT Education PowerPoint.pptx*
Recruitment Material: *Recruitment and Reminder Emails.docx*

Regulatory Determinations/Comments:

- Not Research as defined by 45 CFR 46.102(l): As presented, the activities described above do not meet the definition of research cited in the regulations issued by U.S. Department of Health and Human Services which state that "Research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Activities that meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program that is considered research for other purposes. For example, some demonstration and service programs may include research activities. For purposes of this part, the following activities are deemed not to be research."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

APPENDIX B:

CONSENT DOCUMENT (DISCLOSURE FORM)

Educating Providers on Cognitive Behavioral Therapy to Treat Type 2 Diabetes-Related Psychological Distress

You are being asked to participate in a quality improvement project conducted by Principal Investigator Esther Choi, a Doctor of Nursing Practice student enrolled at the University of Arizona. Please read and review this form prior to your participation to understand the potential risks and benefits of participating in this project.

The purpose of this quality improvement project is to educate healthcare providers (HCPs) on the advantages of utilizing or referring cognitive behavioral therapy (CBT) to patients with type 2 diabetes-related psychological distress, specifically major depressive disorder, and diabetes-related distress. The primary outcome of this project is to increase HCPs' knowledge of CBT and to evaluate their intention to use CBT or refer patients to specialists who could provide CBT to manage major depressive disorder and diabetes-related distress. This online activity will take approximately 30 minutes (5 minutes for pretest, 20 minutes for the PowerPoint presentation, and 5 minutes for the posttest survey). The educational overview of CBT will be given through a Qualtrics with a pre-recorded PowerPoint presentation. Your survey answers will remain anonymous.

Your contact information will only be available to the principal investigator. Your identification will not be reported in the publication of the study, and your email address will be deleted after the completion of this study. By submitting your survey responses, you are consenting to allow the PI to use your responses for this project. The information and responses that you provide will be handled confidentially and not be duplicated for future studies.

Participation in this project is voluntary. However, should you discontinue and withdraw at any time from the project, there will be no penalty. There are no legal risks associated with participating in this project. No compensation will be provided for your participation.

For questions, concerns, or complaints about this project, you may contact the primary investigator:

Esther Choi, MS-RN
DNP-PMHNP Student
Email: eyoonheekim@email.arizona.edu
Phone: 949-226-9222

I have read the terms and I agree to participate

○ Yes
○ No

APPENDIX C:

RECRUITMENT MATERIAL (RECRUITMENT EMAIL)

Recruitment email (To send two days prior to implementation opening date):

I, Esther Choi, would like to invite you to participate in my quality improvement project. Your voluntary participation involves the completion of three components: pretest survey (5 minutes), educational PowerPoint presentation (20 minutes), and posttest survey (5 minutes). The asynchronous educational session will discuss psychological distress related to type 2 diabetes mellitus (T2DM) and the impact of offering cognitive behavioral therapy as a tool to treat T2DM related psychological distress. These three components can be taken in one sitting and started at your convenience. The link to complete the intervention will open on (insert date) and remain active for two weeks until (insert date). Your responses and identification will remain confidential and will only be used for the purpose of this project. Your participation in this QI project is voluntary, and no incentive will be provided.

First reminder email (To send on implementation opening date):

This is a reminder that the link to participate in the quality improvement project is active and is available for completion until (insert date). I would greatly appreciate your participation. Thank you for your time and consideration.

Second reminder email (To send one week before closing date):

This is a reminder that the deadline to voluntarily participate in the quality improvement project is approaching. The link to complete the implementation will remain active until (insert date). I would greatly appreciate your participation. Thank you for your time and consideration.

APPENDIX D:

EVALUATION INSTRUMENTS (PRETEST AND POSTTEST SURVEY)

Pretest Survey

1. How would you rate your current knowledge of psychological distress in patients with type 2 diabetes mellitus?
    a. Extremely knowledgeable
    b. Very knowledgeable
    c. Moderately knowledgeable
    d. Slightly knowledgeable
    e. Not at all knowledgeable

2. How would you rate your current knowledge of CBT in treating T2DM related psychological distress?
    a. Extremely knowledgeable
    b. Very knowledgeable
    c. Moderately knowledgeable
    d. Slightly knowledgeable
    e. Not at all knowledgeable

3. ____ out of 5 individuals with T2DM suffer from major depressive disorder.
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5

4. Addressing major depressive disorder and diabetes-related distress (DRD) in T2DM patients can improve _______
    a. Quality of life
    b. Self-management behaviors
    c. Hemoglobin A1c
    d. All the above

5. CBT interventions can address ______ in adolescents and adults with T2DM
    a. Mild-to-moderate depression
    b. Moderate depression
    c. Moderate-to-Severe depression
    d. Severe depression

6. Utilizing or referring to cognitive behavioral therapy would be beneficial for my patients who have T2DM related psychological distress.
    a. Strongly Agree
    b. Somewhat Agree
    c. Neither Agree nor Disagree
    d. Somewhat Disagree

e. Strongly Disagree

7. How likely are you to utilize or refer to CBT for patients with psychological distress related to T2DM in your practice?
    a. Extremely likely
    b. Very likely
    c. Likely
    d. Somewhat likely
    e. Extremely unlikely

Posttest Survey

1. How would you rate your current knowledge of psychological distress in patients with type 2 diabetes mellitus now that you have reviewed the educational presentation?
    a. Extremely knowledgeable
    b. Very knowledgeable
    c. Moderately knowledgeable
    d. Slightly knowledgeable
    e. Not at all knowledgeable

2. How would you rate your current knowledge of CBT in treating T2DM related psychological distress now that you have reviewed the educational presentation?
    a. Extremely knowledgeable
    b. Very knowledgeable
    c. Moderately knowledgeable
    d. Slightly knowledgeable
    e. Not at all knowledgeable

3. ____ out of 5 individuals with T2DM suffer from major depressive disorder
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5

4. Addressing major depressive disorder and diabetes-related distress (DRD) in T2DM patients can improve _______
    a. Quality of life
    b. Self-management behaviors
    c. Hemoglobin A1c
    d. All the above

5. CBT interventions can address ______ in adolescents and adults with T2DM
    a. Mild-to-moderate depression
    b. Moderate depression
    c. Moderate-to-Severe depression
    d. Severe depression

6. Utilizing or referring to cognitive behavioral therapy would be beneficial for my patients who have T2DM related psychological distress.
    a. Strongly agree
    b. Somewhat agree
    c. Neither agree nor disagree
    d. Somewhat disagree

e. Strongly Disagree

7. How likely are you to utilize or refer to CBT for patients with psychological distress related to T2DM in your practice?
    a. Extremely likely
    b. Very likely
    c. Likely
    d. Somewhat likely
    e. Extremely unlikely

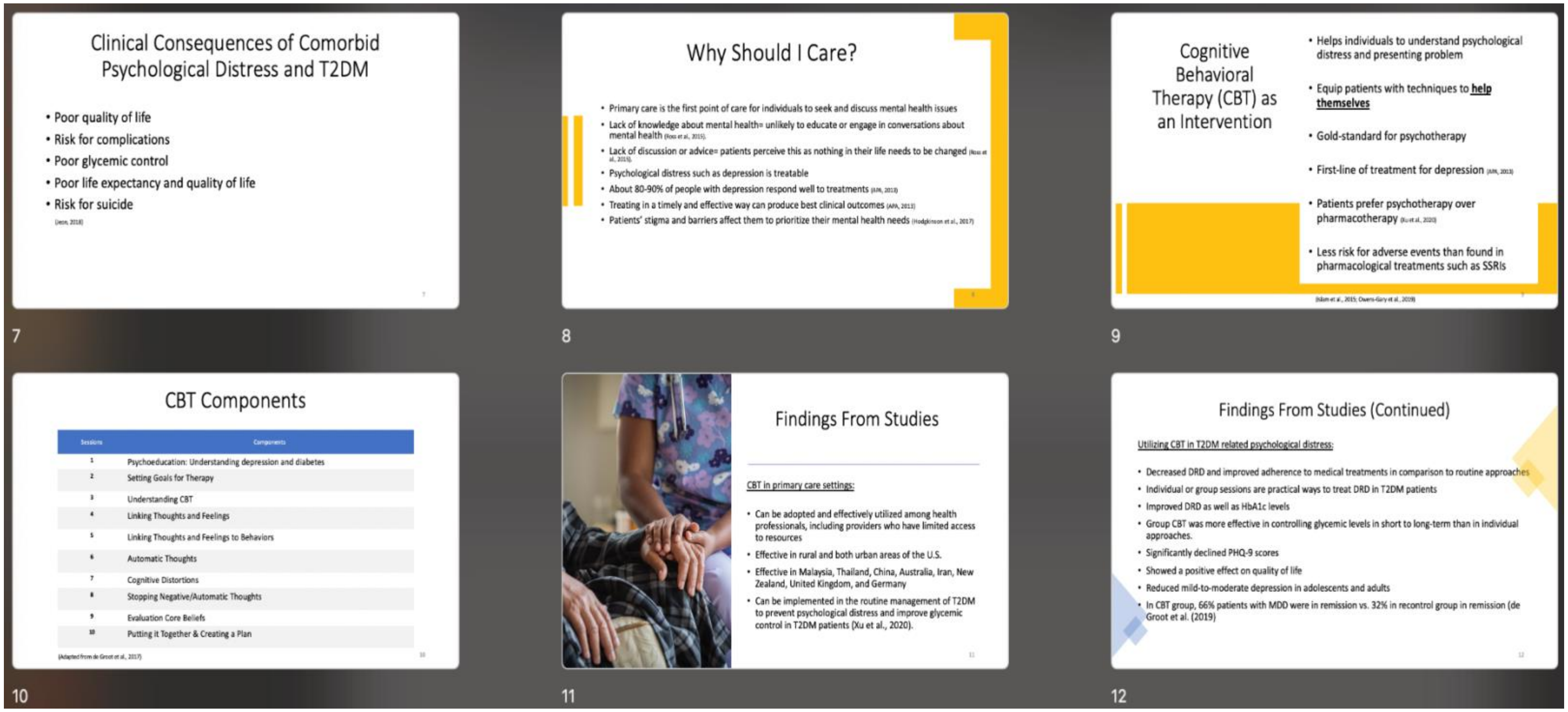
8. What are some barriers to utilizing CBT in your practice?

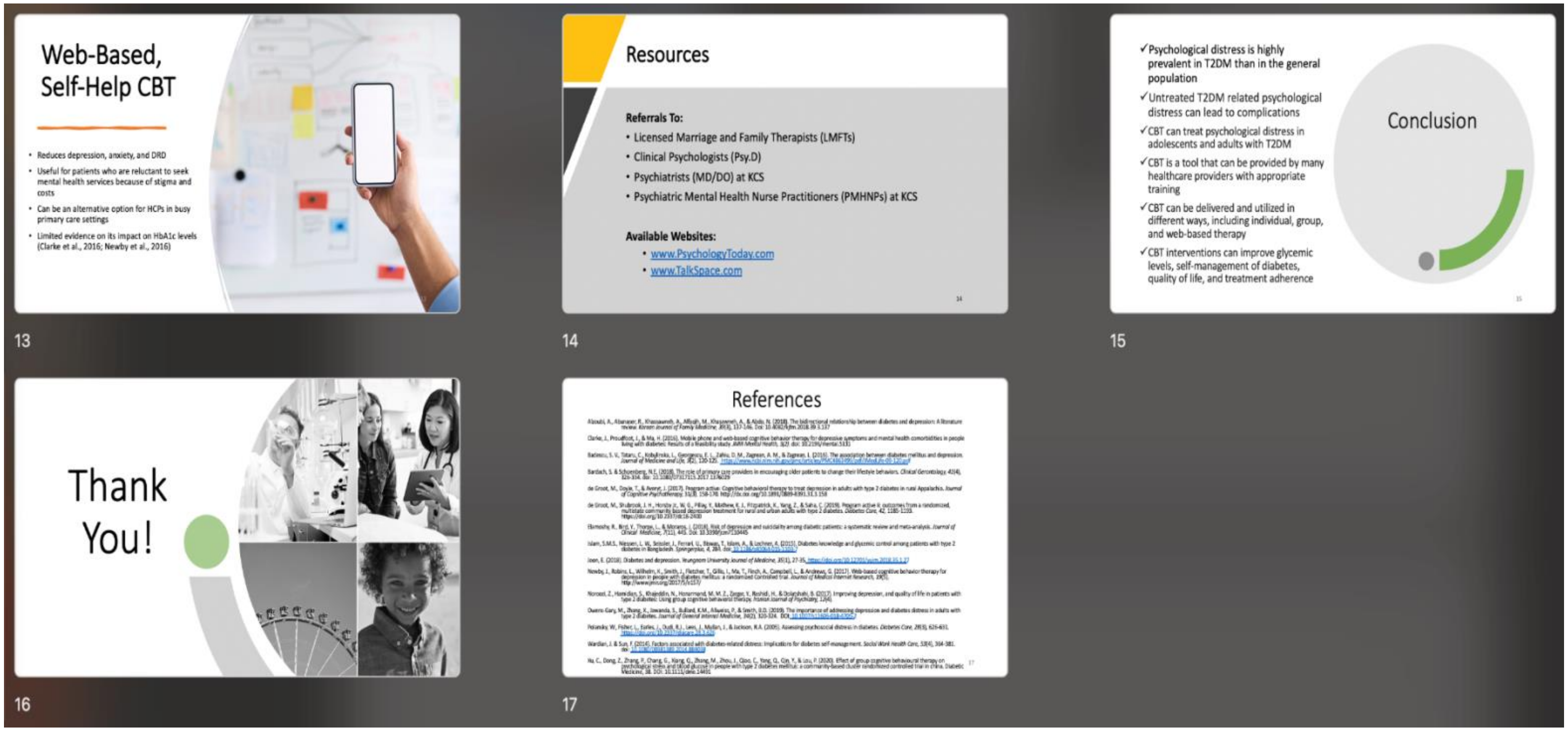
9. What was most helpful to you in this presentation? Least helpful?

APPENDIX E:

PARTICIPANT MATERIAL (POWERPOINT PRESENTATION SLIDES)

Educating Providers on Cognitive Behavioral Therapy To Treat Type 2 Diabetes-Related Psychological Distress
Esther Choi, MS-RN
DNP-PMHNP Student
University of Arizona, College of Nursing
1
Major Depressive Disorder in Type 2 Diabetes (T2DM)
• Major depressive disorder (MDD) is highly prevalent among T2DM patients
• MDD in T2DM occurs in 2-3 times more than in the general population
• 1 out of 5 individuals who live with T2DM suffer from MDD
• Depressed T2DM patients are twice as likely to have suicidal ideations
• Relationship between MDD and diabetes is bidirectional
2
Symptoms of MDD
• Low mood
• Insomnia or hypersomnia
• Anhedonia
• Appetite changes (significant weight gain or loss)
• Feelings of guilt, worthlessness, hopelessness, and helplessness
• Poor concentration
• Fatigue or low energy
• Suicidal ideations
• Occurs nearly every day, for at least 2 weeks
• Can affect an individual's functioning (social, interpersonal, school)
3
Risk Factors
Sex
Body mass index
Socioeconomic status
Marital status
Childhood adversity
Social deprivation
4
What is Diabetes-Related Distress (DRD)?
An emotional burden that emerges when an individual with diabetes suffers from:
• overwhelming demands of self-management
• uncontrollable glycemic levels
• limited access to care
• lack of social support
DRD can be exacerbated by:
• limited knowledge of diabetes
• poor understanding of what self-care activities entail
• poor interactions with primary care physicians
5
Impact of DRD
• DRD is twice as prevalent as MDD
• 1 out of 3 suffer from DRD
• 70% do not meet the criteria for MDD
• DRD levels in T2DM have strong correlation to Hb1Ac levels
• Emotional burden and regimen-related distress are strongly linked to higher levels of DRD
6


Clinical Consequences of Comorbid Psychological Distress and T2DM
• Poor quality of life
• Risk for complications
• Poor glycemic control
• Poor life expectancy and quality of life
• Risk for suicide
7
Why Should I Care?
• Primary care is the first point of care for individuals to seek and discuss mental health issues
• Lack of knowledge about mental health= unlikely to educate or engage in conversations about mental health (Ross et al., 2015).
• Lack of discussion or advice= patients perceive this as nothing in their life needs to be changed (Ross et al., 2015).
• Psychological distress such as depression is treatable
• About 80-90% of people with depression respond well to treatments (APA, 2013)
• Treating in a timely and effective way can produce best clinical outcomes (APA, 2013)
• Patients' stigma and barriers affect them to prioritize their mental health needs (Hodgkinson et al., 2017)
8
Cognitive Behavioral Therapy (CBT) as an Intervention
• Helps individuals to understand psychological distress and presenting problem
• Equip patients with techniques to help themselves
• Gold-standard for psychotherapy
• First-line of treatment for depression (APA, 2013)
• Patients prefer psychotherapy over pharmacotherapy (Xu et al., 2020)
• Less risk for adverse events than found in pharmacological treatments such as SSRIs
(Islam et al., 2015; Owens-Gary et al., 2019)
9
CBT Components
Sessions Components
1 Psychoeducation: Understanding depression and diabetes
2 Setting Goals for Therapy
3 Understanding CBT
4 Linking Thoughts and Feelings
5 Linking Thoughts and Feelings to Behaviors
6 Automatic Thoughts
7 Cognitive Distortions
8 Stopping Negative/Automatic Thoughts
9 Evaluation Core Beliefs
10 Putting it Together & Creating a Plan
(Adapted from de Groot et al., 2017)
10
Findings From Studies
CBT in primary care settings:
• Can be adopted and effectively utilized among health professionals, including providers who have limited access to resources
• Effective in rural and both urban areas of the U.S.
• Effective in Malaysia, Thailand, China, Australia, Iran, New Zealand, United Kingdom, and Germany
• Can be implemented in the routine management of T2DM to prevent psychological distress and improve glycemic control in T2DM patients (Xu et al., 2020).
11
Findings From Studies (Continued)
Utilizing CBT in T2DM related psychological distress:
• Decreased DRD and improved adherence to medical treatments in comparison to routine approaches
• Individual or group sessions are practical ways to treat DRD in T2DM patients
• Improved DRD as well as HbA1c levels
• Group CBT was more effective in controlling glycemic levels in short to long-term than in individual approaches.
• Significantly declined PHQ-9 scores
• Showed a positive effect on quality of life
• Reduced mild-to-moderate depression in adolescents and adults
• In CBT group, 66% patients with MDD were in remission vs. 32% in recontrol group in remission (de Groot et al. (2019)
12


Web-Based, Self-Help CBT
Reduces depression, anxiety, and DRD
Useful for patients who are reluctant to seek mental health services because of stigma and costs
Can be an alternative option for HCPs in busy primary care settings
Limited evidence on its impact on HbA1c levels (Clarke et al., 2016; Newby et al., 2016)
13
Resources
Referrals To:
Licensed Marriage and Family Therapists (LMFTs)
Clinical Psychologists (Psy.D)
Psychiatrists (MD/DO) at KCS
Psychiatric Mental Health Nurse Practitioners (PMHNPs) at KCS
Available Websites:
www.PsychologyToday.com
www.TalkSpace.com
14
Psychological distress is highly prevalent in T2DM than in the general population
Untreated T2DM related psychological distress can lead to complications
CBT can treat psychological distress in adolescents and adults with T2DM
CBT is a tool that can be provided by many healthcare providers with appropriate training
CBT can be delivered and utilized in different ways, including individual, group, and web-based therapy
CBT interventions can improve glycemic levels, self-management of diabetes, quality of life, and treatment adherence
Conclusion
15
Thank You!
16
References
17

APPENDIX F:

PROJECT TIMELINE

Date	Project
8/10/2021	IRB application submission
8/16/2021	IRB application approval
9/17/2021	Sent invitation to providers to participate in the project intervention
9/17/2021- 9/24/2021	Project Implementation Process begins; Send disclosure forms, link for pretest, and deliver asynchronous educational PowerPoint presentation. Distribute posttest surveys.
10/4/2021	Posttest surveys received
9/17/2021- 10/4/2021	Data analysis and Outcomes
11/19/2021	DNP project presentation to committee

APPENDIX G:

LITERATURE REVIEW GRID

Project Question: *Will an educational presentation given to providers at the KCS clinic about T2DM related psychological distress and CBT as a treatment impact their knowledge and increase their intent to utilize CBT as a tool to manage psychological distress in patients with type 2 diabetes?*

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
Alahyari, A.Z., Bayazi, M.H., & Rajaei, A.R., 2021	The effectiveness of cognitive behavioral group intervention on depression and anxiety in patients with type ii diabetes	RCT	The 12-week cognitive behavioral group intervention, which followed the cognitive behavioral group therapy approach, significantly reduced anxiety and depression in female patients compared to those in the control group.	Depression and DRD should be carefully assessed in female patients. CBT interventions can be beneficial to female patients who are diagnosed with T2DM.
Yang, X., Li, Z., & Sun, Z., 2020	Effects of cognitive behavioral therapy-based intervention on improving glycaemic, psychological, and physiological outcomes in adult patients with diabetes mellitus: A meta-analysis of randomized controlled trials	Meta-analysis of RCTs	CBT interventions are more beneficial to treat depression symptoms in T2DM than control group intervention. CBT-based interventions had a significant effect on HbA1c levels when focused on behavioral experiment, stress management, homework assignments, and interpersonal strategies.	CBT can benefit T2DM patients who have high HbA1c levels. As they work through tailored interventions, improvements in diabetes-related psychological outcomes can be expected.
Kanapathy, J. & Bogle, V., 2019	The effectiveness of cognitive behavioural therapy for depressed patients with diabetes: A systematic review	Systematic Review	• CBT interventions positively impacted T2DM patients with depressive symptoms. • Patients with T2DM and depression had negative impact on quality of life compared to diabetics without depression.	CBT shows overall improvement in HbA1c, and self-efficacy related to diabetic patients with T1DM and T2DM. In addition, diabetes self-management education is needed and important.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
			• Depressed diabetic patients were found to have trouble with their adherence to diabetes treatment regimen and poor self-care behaviors. • Patients in the CBT intervention learned problem-solving skills	
Li, C., Xu, D., Tan, Y., Zhang, G., & Chen, L. 2017	A systematic review and metaanalysis of randomized controlled trials of cognitive behavior therapy for patients with diabetes and depression	Systematic review of RCTs	• Statistically significant improvements in fasting glucose, DRD, and quality of life were observed in CBT groups compared to those in control groups • From ten studies selected in the systematic review, CBT had no effect on glycemic control	Depression, fasting glucose, and quality of life are main outcomes and benefits that can be expected in patients who receive CBT.
Wang, Z., Xia, Y., Zhao, Y., & Chen, L., 2017	Cognitive behavioural therapy on improve the depression symptoms in patients with diabetes: a meta-analysis of randomized control trials	Meta analysis of RCT	• Immediately after intervention and at 12 months follow up, CBT groups demonstrated significant improvements in depressive symptoms than those in the control groups	Providing CBT to T2DM can have a long-term effect on their depressive symptoms.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
de Groot, M., Doyle, T., & Averyt, J., 2017	Program active: Cognitive behavioral therapy to treat depression in adults with type 2 diabetes in rural appalachia	Single-arm experimental study	• Improved depression and glycemic control in patients who were living in rural Appalachia. • The diabetes-specific CBT intervention and materials were tailored to patients with MDD. Results showed materials were culturally sensitive and easy to understand as they were designed for individuals with 6th grade reading level or higher.	Tailoring CBT to culture and reading level is important in providing access to resources. Using materials that are accessible can be perceived as useful and effective.
Clarke, J., Proudfoot, J., & Ma, H., 2016	Mobile phone and web-based cognitive behavior therapy for depressive symptoms and mental health comorbidities in people living with diabetes: Results of a feasibility study	Within-subject, post design	• Participants who used the myCompass phone application for 7 weeks reported significant reduction in their depressive symptoms and improvements in diabetes self-efficacy beliefs, social functioning, and DRD.	Delivering CBT through mobile phone is effective, convenient, and an acceptable treatment option for individuals with T2DM.
Tunsuchart, K., Lerttrakarnnon, P., Srithanaviboonchai, K., Likhitsathian, S., & Skulphan, S., 2020	Benefits of Brief Group Cognitive Behavioral Therapy in Reducing Diabetes-Related Distress and HbA1c in Uncontrolled Type 2 Diabetes Mellitus Patients in Thailand	Quasi experimental design, pre- and posttest design	• BC-CBT and education can reduce DDS-17 scores and improve glycemic control in T2DM patients. • CBT groups can be efficient and save time	BC-CBT can be a type of approach used for patients who have concerns regarding HbA1c levels, DRD, and diet modifications.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
			as it treats more than one patient at a time. • CBT can be offered as a treatment once moderately distressed patients are identified.	Patients who find 1:1 therapy intimidating may prefer group therapy.
Clarke, J., Sanatkar, S., Baldwin, P.A., Fletcher, S., Gunn, J., Wilhelm, K., Campbell, L., Zwar, N., Harris, M., Lapsley, H., Hadzi-Pavlovic, D., Christensen, H., & Proudfoot, J. 2019	A Web-Based Cognitive Behavior Therapy Intervention to Improve Social and Occupational Functioning in Adults with Type 2 Diabetes (The SpringboarD Trial): Randomized Controlled Trial	RCT	• Web-based cognitive behavioral therapy improved diabetes distress, depression, and anxiety • Three months post-intervention results showed improvements in social and occupational functioning in individuals in the intervention group compared to the control group. • Web-based CBT improved medication adherence	Web-based CBT can benefit patients who have mild-to-moderate depressive symptoms. An option that HCPs could consider if they have time constraints to provide CBT or patients have stigma that prevent them from seeing a mental health specialist. Low intensity treatment such as CBT can be effective.
Lutes, L. D., Cummings, D. M., Littlewood, K., Le, M. T., Kirian, K., Patil, S., Solar, C., Carraway, M., & Hambridge, B., 2020	A tailored cognitive-behavioural intervention produces comparable reductions in regimen-related distress in adults with type 2 diabetes regardless of insulin use: 12-month outcomes from the comrade trial	RCT	• Insulin users in the CBT intervention group reported improvements in their regimen-related distress. • Compared to the non-insulin users and insulin users, insulin group had significantly decreased	CBT can be beneficial to individuals who use insulin who are struggling to manage T2DM through medication adherence, lifestyle modifications, regimen-related distress, glycemic control.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
			A1c levels though it did not reach guideline-recommended target level.	
Tovote, K. A., Schroevers, M. J., Snippe, E., Emmelkamp, P. M., Links, T. P., Sanderman, R., & Fleer, J., 2017	What works best for whom? Cognitive behavior therapy and mindfulness-based cognitive therapy for depressive symptoms in patients with diabetes	RCT	• Eight weeklong outpatient treatment sessions (CBT and MBCT) were offered to patients. Patients with a history of psychiatric treatments did not show significant treatment outcomes from both CBT and MBCT than those who had no prior treatment. • Level of education was correlated to treatment outcomes. Participants in the CBT group who had lower level of education benefited more from treatment than in MBCT groups.	CBT is a good approach for patients with lower levels of educational attainment.
Noroozi, Z., Hamidian, S., Khajeddin, N., Honarmand, M. M. Z., Zargar, Y., Rashidi, H., & Dolatshahi, B., 2017	Improving depression, and quality of life in patients with type 2 diabetes: Using group cognitive behavioral therapy	RCT	• Depression and quality of life scores improved after the intervention compared to the results of the control group • Quality of life, diabetes-specific emotional distress, social interrelationships, and	Treatments for DRD in T2DM should be focused on stress management and self-care behavior. Providing group-based CBT can be helpful for patients who are in denial about their depressive symptoms related

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
			physical health were reported to have increased among individuals within the CBT group • Education about sugar metabolism, healthy diet, stress management, problem solving, and interpersonal skills were provided, which helped to target DRD • Group-based CBT enabled participants to observe similar DRD behaviors of other participants, change their negative perception of T2DM being a weakness, and ultimately accept their symptoms	to T2DM or have poor self-management behaviors.
Schmitt, A., Reimer, A., Ehrmann, D., Kulzer, B., Haak, T., & Hermanns, N., 2017	Reduction of depressive symptoms predicts improved glycaemic control: Secondary results from the diamos study	RCT	• DIAMOS study examined the effects of CBT and usual care on patients with depressive symptoms during a 12-month trial. Findings show that when depressive symptoms are reduced, greater improvements in HbA1c levels were seen and	The importance of treating depressive symptoms is that it can decrease HbA1c levels in T2DM patients. CBT can improve both glycemic outcomes as well as psychological health outcomes.

Pub. Year; Author's Last Name	**Title of Publication**	**Type of Study**	**Main Outcomes of Findings**	**Support for and or Link to Project**
			likely to reach their in-target level (<7.5%)	
Wroe, A.L., Rennie, E.W., Sollesse, S., Chapman, J., & Hassy, A., 2018	Is cognitive behavioural therapy focusing on depression and anxiety effective for people with long-term physical health conditions? A controlled trial in the context of type 2 diabetes mellitus	RCT	• Group CBT were provided by practitioners, who received training from clinical psychologists. Both control group and CBT group showed improvements in mood score and social adjustment. • Participants in the group CBT was more effective in improving mood scores and managing diabetes	Interventions that are tailored to T2DM are important for patients to manage their moods and diabetes.
Gulley, L. D., Shomaker, L. B., Kelly, N. R., Chen, K. Y., Stice, E., Olsen, C. H., Tanosky-Kraff, M., & Yanovski, J. A., 2019	Indirect effects of a cognitive behavioral intervention on adolescent weight and insulin resistance through decreasing depression in a randomized controlled trial	RCT	• Brief-CBT and health education were provided to adolescents with T2DM and compared to post-treatment and at one year follow up. had an indirect effect on depression. • CBT decreased depressive symptoms in adolescents with higher baseline depression. • One year after treatment, CBT was found to have an indirect effect on	CBT that focuses on targeting depression in adolescents can prevent fasting insulin after one year of treatment.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
			BMI, adiposity, and insulin sensitivity.	
Cummings, D. M., Lutes, L. D., Littlewood, K., Solar, C., Carraway, M., Kirian, K., Patil, S., Adams, A., Ciszewski, S., Edwards, S., Gatlin, P., & Hambidge, B., 2019	Randomized trial of a tailored cognitive behavioral intervention in type 2 diabetes with comorbid depressive and or regiment-related distress symptoms: 12-month outcomes from comrade	RCT	• Participants who completed the 16 session CBT also received problem-solving therapy (PST). Those in the experimental group had greater reduction in HbA1c compared to those in the usual care group at 12-month follow up. • Declines in PHQ-9 scores were seen in 26% of the participants in the group who only received life-style change intervention while 56% were seen in the CBT group • 93% of the encounters were face-to-face sessions while 6% were done by telephone • Decline in HbA1c was correlated to the decline in regimen-related distress, but an increase in medication adherence	Diabetes care and behavioral interventions can be provided in the same setting. Behavioral interventions such as CBT can be provided by trained behavioral providers. When using PST, a variant of CBT is provided, patients learn to improve in their diabetes-specific behaviors. Collaborative support from healthcare providers and behavioral health providers are needed to bring about changes in T2DM patients.
de Groot, M., Shubrook, J. H., Horsby Jr., W. G., Pillay, Y., Mathew, K. J.,	Program active ii: outcomes from a randomized, multistate community-based	RCT	• Participants were randomly divided into four different groups:	CBT and exercise interventions can provide significant improvement in

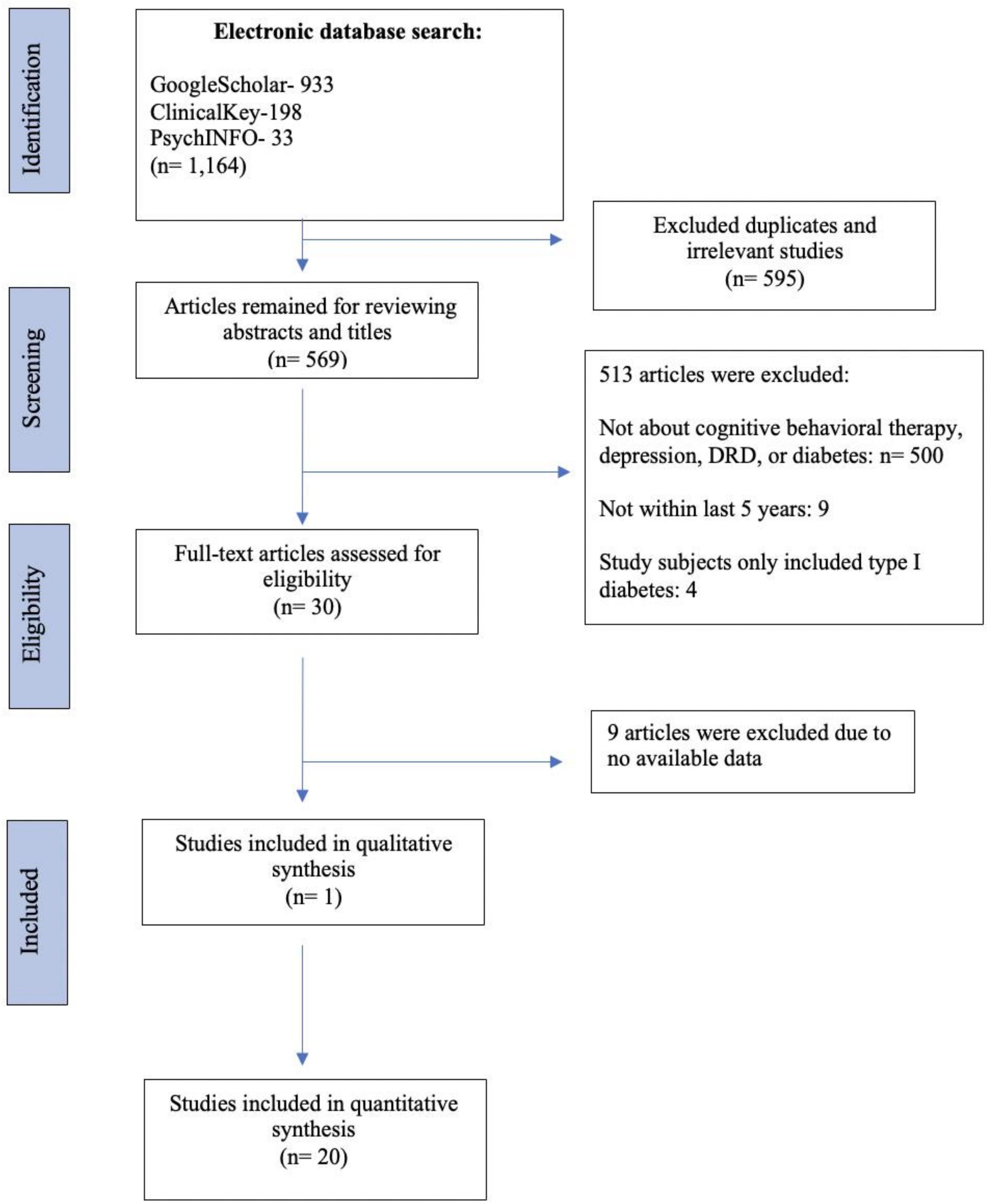
Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
Fitzpatrick, K., Yang, Z., & Saha, C., 2019	depression treatment for rural and urban adults with type 2 diabetes		CBT, Community-based exercise with trained exercise professionals, CBT and exercise interventions, and usual care. Results showed that adults in the CBT group showed 55% rate of remission from MDD, 72% in exercise only group, 71% in CBT and exercise group, and 32% in the usual care group. • DRD, cholesterol level, significantly decreased in the intervention groups compared to the UC group.	depressive symptoms, DRD, and quality of life. CBT intervention can be offered to individuals with T2DM who live in urban and rural areas.
Xu, C., Dong, Z., Zhang, P., Chang, G., Xiang, Q., Zhang, M., Zhou, J., Qiao, C., Yang, Q., Qin, Y., & Lou, P., 2020	Effect of group cognitive behavioural therapy on psychological stress and blood glucose in people with type 2 diabetes mellitus: a community-based cluster randomized controlled trial in china	RCT	• General practitioners who were trained in group CBT were able to improve long-term effect in T2DM who had mild depression. • PHQ-9 scores and GAD-7 scores reduced in the group-CBT group compared to the usual care group	Mild-to-moderate depression and anxiety can significantly improve with group-CBT. NPs in primary care and outpatient settings can deliver CBT with appropriate training.
Whitehead, L.C., Crowe, M.T., Carter, J. D., Maskill, V. R., Carlyle, D., Bugge, C., & Frampton, C. M. A., 2017	A nurse-led education and cognitive behaviour therapy-based intervention among adults with uncontrolled type	RCT	• Acceptance and commitment therapy was the type of CBT that	Mental health nurses with expertise in ACT, a type of CBT can help provide

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
	2 diabetes: A randomnised controlled trial		was delivered to adults uncontrolled T2DM. • Intervention groups, ACT- education group and education only group significantly decreased HbA1c levels compared to those in the control group at 6 months post-intervention • Participants in the intervention groups showed slight improvements in acceptance of diabetes, anxiety, depression, understanding, Diabetes Treatment Satisfaction Questionnaire, and self-management	education interventions in T2DM. CBT can be effective in reducing A1c levels.
Shomaker, L.B., Kelly, N. R.., Pikcworth, C. K., Cassidy, O. L., Radin, R. M., Shank, L. M., Vannucci, A., Thompson, K. A., Aramiz-Flores, S. A., Brady, S. M., Demidowich, A. P., Galescu, O. A., Courville, A. B., Olsen, C., Chen, K. Y., Stice, E., Tanofsky-Kraff, M., & Yanovski, J. A., 2016	A randomized controlled trial to prevent depression and ameliorate insulin resistance in adolescent girls at-risk for type 2 diabetes	RCT	• Both 6-week Cognitive behavioral (CB) group and health education (HE) group demonstrated similar decreased depressive symptoms from baseline and at post-intervention. • The girls from the CB group who were moderately depressive at baseline demonstrated significant improvements in	Providing health education is as important as providing CB interventions.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
			depressive symptoms compared to the HE groups • Insulin sensitivity and fasting insulin were stable in all participants at baseline and at post-intervention	
Newby, J., Robins, L., Wilhelm, K., Smith, J., Fletcher, T., Gillis, I., Ma, T., Finch, A., Campbell, L., & Andrews, G., 2017	Web-based cognitive behavior therapy for depression in people with diabetes mellitus: a randomized Controlled trial.	RCT	Internet based CBT groups found large reductions in depressive symptoms from baseline and at posttreatment. Scores from PAID, K-10, PHQ-9 scores reflected that I-CBT groups had better outcomes than those who received usual care. I-CBT enabled patients to manage depression and to gain confidence to recommend the program someone else with similar problems	Further explores the alternative options to address depressive symptoms Discuss value of internet-based CBT interventions

APPENDIX H:

OTHER DOCUMENTS AS APPLICABLE TO THE PROJECT (FLOW DIAGRAM)


Identification
Electronic database search:
GoogleScholar- 933
ClinicalKey-198
PsychINFO- 33
(n= 1,164)
Excluded duplicates and irrelevant studies
(n= 595)
Screening
Articles remained for reviewing abstracts and titles
(n= 569)
513 articles were excluded:
Not about cognitive behavioral therapy, depression, DRD, or diabetes: n= 500
Not within last 5 years: 9
Study subjects only included type I diabetes: 4
Eligibility
Full-text articles assessed for eligibility
(n= 30)
9 articles were excluded due to no available data
Included
Studies included in qualitative synthesis
(n= 1)
Studies included in quantitative synthesis
(n= 20)

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