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A Multimodal Intervention Treatment Plan for Adults with Generalized Anxiety Disorder in Primary Care

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A MULTIMODAL INTERVENTION TREATMENT PLAN FOR ADULTS WITH GENERALIZED ANXIETY DISORDER IN PRIMARY CARE

by

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DEDICATION

This EBP project is dedicated to two important people in my life. First, my daughter, Charlotte Cantwell, for giving me the motivation to pursue my dreams of becoming an advanced practice nurse. You will always be my inspiration and I love you unconditionally. This project is also dedicated to my Poppa, Doug Cullings. Although you are no longer here, your memories continue to regulate my life. You have had the most profound impact on my life. I am forever grateful for your wisdom and support.

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ABSTRACT

Generalized anxiety disorder (GAD) is a debilitating psychological condition that affects 3.1% of the American population and is one of the leading causes of disability (Anxiety and Depression Association of America, 2022; Baxter, 2014). The purpose of this evidence-based practice project was to implement a multimodal intervention to decrease GAD symptoms in adults in the primary care setting. The PICOT question that guided this project was: In adults, over the age of 18, who have been diagnosed with generalized anxiety disorder (GAD), does the combination of digital cognitive behavioral therapy (CBT) through a smartphone application, lifestyle modification education, and pharmacotherapy improve patient's GAD-7 scores over an 8-week period in the primary care setting? A comprehensive literature search of six databases and citation chasing were conducted to determine the best treatment practices for GAD in primary care. Fourteen pieces of high-level evidence graded using evidence-based appraisal tools supported the implementation of CBT, lifestyle modifications, and pharmacotherapy. A sample of 13 adult participants were recruited in a primary care clinic and screened for GAD using the GAD-7 scale. Participants underwent an eight-week intervention consisting of digital CBT, lifestyle modification including an exercise regimen, and pharmacotherapy. Participants were contacted every two weeks to obtain GAD-7 scores and assess adherence to interventions. A paired *t* test was used to compare the mean baseline GAD-7 scores to the mean eight-week GAD-7 scores. A significant decrease from baseline to eight weeks was found (t (13) = -3.975, p <0.05). A repeated measures ANOVA was calculated comparing scores of participants at four different times: baseline, two-weeks, four-weeks, and eight-weeks. A significant effect was found (F (1,12) = 42.783, p < 0.01). Follow up protect *t* tests revealed that scores did not begin to significantly decrease until four weeks after the intervention (M = -2.38, sd = 3.38). These findings suggest that a combination of digital CBT, lifestyle modifications, and pharmacotherapy decreases anxiety symptoms in adults with GAD. Future research should compare digital CBT to face-to-face CBT. Research should be conducted to identify barriers to implementing

psychological interventions in primary care and evaluate their effectiveness in comparison to pharmacological interventions.

Keywords: Generalized anxiety disorder, anxiety, cognitive behavioral therapy, CBT, exercise, SSRIs, antidepressants, pharmacotherapy

CHAPTER 1

INTRODUCTION

Generalized anxiety disorder (GAD) affects 6.8 million Americans, or 3.1% of the U.S. population, yet only 43.2% are receiving treatment (Anxiety and Depression Association of America, 2022). Women are twice as likely to be diagnosed with GAD and the percent of adults who experience mild, moderate, or severe anxiety symptoms was highest among adults ages 18 to 29 (ADAA, 2022; Center for Disease Control and Prevention, 2021). Furthermore, GAD is twice as common as dementia and four to six times more common than depression in the elderly (Papadakis & McPhee, 2020). The effects of the COVID-19 pandemic have substantially increased the number of cases of anxiety and depression in the United States. According to Census Bureau Household Pulse Survey (HPS) data, the CDC reported that the frequency of anxiety and depression symptoms was positively correlated with the average number of daily COVID-19 cases. The DSM-5 defines GAD as a persistent and excessive worry about different things ranging from money, health, family, work, or other issues and individuals with GAD have difficulty controlling that worry (DeMartini, et al. 2019). For a diagnosis of GAD, the person must have trouble controlling worry more days than not for at least six months. Furthermore, the patient must meet three or more of the symptom criteria (ADAA, 2022). These criteria include feeling nervous, irritable, or on edge, a sense of impending doom or panic, increased heart rate, hyperventilation, sweating or trembling, feeling weak or tired, concentration difficulty, sleep issues, or gastrointestinal problems (ADAA, 2022).

At moderate levels, anxiety can increase alertness and improve performance. However, high levels of anxiety can reduce a person's ability to think and affect one's ability to perform. A constant high level of anxiety can be debilitating leading to impairments in social functioning. This can lead to unemployment, interpersonal and marital conflict, and social isolation (Kessler, 2007). Anxiety is a leading cause of disability and accounts for more years lived with a disability

than any other mental health condition, and many physical health conditions (Baxter, 2014). Untreated anxiety has been associated with high societal costs, loss of productivity, burden of disease, and significant morbidity (Sapra, et al., 2020; Smit, et al., 2006). Patients with GAD often have other mental health comorbidities. Patients diagnosed with GAD often have a concomitant diagnosis of major depression (Munir & Takov, 2022).

The exact mechanism of GAD is not fully understood. Noradrenergic, serotonergic, and other neurotransmitters seem to play a role in the body's response to stress (Munir & Takov, 2022). Common pathways involved with anxiety include the noradrenergic and serotonin systems and there is evidence to suggest that low serotonin system activity and high noradrenergic system activity may play a role in its development (Munir & Takov, 2022). Although the disorder is not fully understood, evidence has been conducted to identify risk factors for the development of GAD. Risk factors include being of the female sex, having a family history of psychiatric disorders, diagnosis of a chronic and/or painful disease, or experiencing childhood adversity. Examples of childhood adversity this include sexual or physical abuse; parental problems involving partner violence, alcoholism, drug use and/or mental illness, exposure to an overprotective or overly harsh parenting style; and bullying or peer victimization (National Institute for Health and Care Excellence, 2021). Environmental stressors such as physical or emotional trauma, domestic violence, unemployment, or low socioeconomic status are also risk factors. Substance dependence or exposure to organic solvents may exacerbate anxiety disorders (NICE, 2021).

The primary care setting is often the first site adult patients seek care for symptoms of anxiety, despite only half of those with the condition choosing to seek care (Parker, et. al. 2021; Sapra, et al. 2020). General practitioners in the primary care setting play an integral role in treating anxiety. Understanding the latest, evidence-based interventions are imperative for proper management of adults seeking treatment for GAD.

Data Supporting Need for the Project

Global, National, Regional, and State Data

Ruscio, et al. (2017) reported that 3.7% of the global population has a lifetime prevalence of GAD. Researchers also reported a 1.8% 12-month prevalence, and a 0.8% 30-day prevalence (Ruscio, et al., 2017). The prevalence varies widely across nations, ranging from 1% in Nigeria and Shenzhen, China to 8% of the population in Australia, New Zealand, and the United States (Ruscio, et al., 2017). Interestingly, the prevalence of GAD increased with economic development of the country: lowest with low income (1.6%), moderate in middle income (2.8%) and highest in high-income countries (5.0%) (Ruscio, et al., 2017). Non-western cultures were associated with lower anxiety scores, however the validity of the instruments and diagnostic criteria used in studies has been questioned regarding a true difference in prevalence (Baxter, et al., 2014). Globally, being female, under the age of 60 years old, and being unmarried (divorced or never married) is associated with GAD (Ruscio, et al., 2017). Furthermore, GAD prevalence is higher with those of lower educational level, household income, and unemployment or disabled status (odds ratio [OR], 1.1; 95%CI, 1.0–1.3 to OR, 1.8; 95% CI, 1.7–2.0) (Ruscio, et al., 2017).

GAD affects 3.1% of the United States population, about 6.8 million adults in any given year, yet only 43% of those diagnosed are receiving treatment (ADAA, 2022). Due to mental health stigmas, lack of healthcare access, and healthcare costs it is likely that these statistics are higher (ADAA, 2022). One study found that rates of misdiagnosis of GAD can be as high at 71% (Combs & Markman, 2014). In the United States, lifetime prevalence of GAD is as high as 29% and is the most commonly presenting anxiety disorder in primary care (Kessler, et al., 2012; Love & Love, 2019; Rivelli & Shirey, 2014). In the United States, the cost to society related to anxiety disorders is projected to be more than $48 billion dollars a year due to missed workdays (Shirneshan, et al., 2013). More than three in ten adults in the United States have reported anxiety or depression symptoms since May 2020. Comparatively, only one in ten adults reported these symptoms in 2019 (Kaiser Family Foundation, 2022).

Similar to the rest of the United States, the incidence of anxiety disorders in Indiana has increased since the COVID-19 pandemic (Kaiser Family Foundation, 2021). Indiana is ranked 32nd in providing access to mental health services (Mental Health America, 2022) and 29.2% of Indiana residents reported unmet needs related to anxiety compared to 26.9% of rest of the nation (Kaiser Family Foundation, 2022). Unmet needs are defined as a person having a perceived or recommended need for mental health services but not receiving care (Kaiser Family Foundation, 2022). The most common cause of unmet needs in Indiana (43.2%) was associated with cost of care (Kaiser Family Foundation, 2022).

Clinical Agency Data

The clinical site chosen for this project was located in Valparaiso, Indiana. As of July 2021, the population is estimated to be 34,428 residents (United States Census Bureau, 2021) with 50.9% estimated to be female and 49.1% male (United States Census Bureau, 2021). The adult population of this city is 75,2%, with 17.8% being over the age of 65 years (United States Census Bureau, 2021). Valparaiso primarily consists of Caucasians (88.6%), while Black or African Americans make up 3.6%, and those identifying as Hispanic/Latino is 7.9% (United States Census Bureau, 2021). 94.3% have a high school diploma or higher and 37.8% have a bachelor's degree or higher (United States Census Bureau, 2021). 8.4% report not having health insurance (United States Census Bureau, 2021).

The clinical site chosen had seven providers. This included two nurse practitioners and five physicians. Two additional nurse practitioners practice at this location but were transitioning out of the practice. For this reason, they were not asked to be included in the project. At the beginning of this project, one physician and one nurse practitioner had agreed to be stakeholders in the project. The project facilitator was a double board-certified physician from the Internal Board of Medicine and the American Academy of Pediatrics. As the project began implementation, four out of the five additional physicians agreed to be a part of the project. Because these providers allowed the project leader to meet with their patients, a larger

population of patients were available as potential participants. Other stakeholders identified for this project included the nurse manager, the registered nurses, and the medical assistances at the site. Although the GAD-7 scale was employed for screening of anxiety at the clinical site, there was no implementation of cognitive behavioral therapy. SSRI or SNRI pharmacotherapy was used routinely, and the project facilitator generally chose fluoxetine, or the brand name Prozac, as the first medication chosen because of its affordability. Education on lifestyle modification was routinely discussed with the patient through conversations but educational material about the diagnosis or how to manage it was not given to the patient. Exercise was encouraged by some of the providers.

Purpose of the Evidence-Based Practice Project

Purpose Statement and PICOT Question

The purpose of this EBP project was to improve patient outcomes in adults that have been diagnosed with GAD in the primary care setting by improving treatment in this clinic using evidence-based interventions and best practice recommendations. Specifically, this project was implemented to address the following PICOT question: in adults, over the age of 18, who have been diagnosed with generalized anxiety disorder (GAD), does the combination of digital cognitive behavioral therapy through a smartphone application, lifestyle modification education, and pharmacotherapy improve patient's GAD-7 scores over an 8-week period in the primary care setting?

EBP Project Description

The EBP project focused on implementing a multimodal intervention to improve GAD-7 scores in adults with GAD. The intervention was a combination of cognitive behavioral therapy through a smartphone application, education on lifestyle modifications, and pharmacotherapy. Education was provided to patients through educational pamphlets created by the project leader. The providers within the clinic prescribed pharmacotherapy, specifically SSRI/SNRI medications based on provider and patient preferences. Participants were recruited in the office during their

scheduled visits. The GAD-7 was the measurement tool used for screening and diagnosis of GAD. When a patient came to the office with symptoms of anxiety or have a GAD score over 9, the project leader asked the patients if they would like to participate in the project. Description of the project, timeframe, interventions, and education were provided to the patients at this time. The project leader then followed the participants response to treatment over eight weeks. At two weeks, four weeks, and eight weeks, the project leader contacted the participants via text or phone call to repeat the GAD-7 scores. These scores were examined following the end of the implementation phase using a repeated measures ANOVA and paired *t*-test of mean GAD-7 scores.

CHAPTER 2

EBP MODEL AND REVIEW OF LITERATURE

Evidence-based Practice Model

The 2017 Iowa Model of Evidence-Based Practice to Promote Excellence in Healthcare, formerly known as the Iowa Model, was chosen to guide implementation of this EBP project (Buckwater, et al., 2017; Melnyk & Fineout-Overholt, 2019). The revised Iowa Model is a practical multiphase change process with feedback loops that provides guidance for nurses and other clinicians to make clinical and administrative changes that affect healthcare outcomes (Melnyk & Fineout-Overholt, 2019). This model began as a research model by a team of nurses from the University of Iowa in 1994 (Titler, et. al, 1994) and has changed over time since its creation. Clinical applications range from addressing clinically relevant topics to organizational or educational programs.

Overview of EBP Model

The revised Iowa Model includes seven steps and three feedback loops in a streamlined manner to guide clinicians through the EBP process (Buckwater, et al., 2017). It begins by encouraging nurses and other clinicians to identify opportunities for improvement in healthcare practice through a spirit of inquiry. The model defines these opportunities for improvement as triggers. A trigger is often identified when clinicians question current practice standards or recognize an area in need of improvement emphasized by newly disseminated evidence or a new organizational initiative. The revised Iowa Model (2017) has added a new step that urges the user to state their purpose or question. Once a trigger has been identified, the user should define a clearly stated objective that determines the charge of the team and specifies clear boundaries. Key components of the purpose statement should include the clinical problem, patient population, pilot area, intervention, comparison, and preferred outcome in a PICOT fashion to provide clarity on the user's goals (Melnyk & Fineout-Overholt, 2019).

Once the purpose statement has been established, the Iowa Model uses a feedback loop to determine if the topic in question is a priority to the organization in question. Identifying issues that are a priority promotes support from senior leadership of the organization in question and allows for early opportunities to connect with stakeholders (Melnyk & Fineout-Overholt, 2019). Once commitment has been made to address a specific topic, the next step is to form a team. A team is composed of stakeholders that may include staff nurses, unit managers, advanced practices registered nurses (APRNs), interprofessional colleagues, and organizational leaders (Melnyk & Fineout-Overholt, 2019). After a team is formed, the team assembles, appraises, and synthesizes a body of evidence by conducting a systematic review of literature and collecting the highest levels of evidence to support the initiative. Sufficient evidence is essential to support the EBP change. The Iowa Model (2017) suggests that if sufficient evidence exists, a practice change should be piloted to determine if the change will work in clinical care (Melnyk & Fineout-Overholt, 2019). The purpose of piloting is to determine outcomes in a controlled environment with a homogenous group of patients to identify issues before the practice change is implemented on a larger scale by multiple caregivers in different settings (Melnyk & Fineout-Overholt, 2019). Designing and piloting a practice change requires engaging patients, considering resources, constraints, and approval, collecting baseline data, preparing clinicians and materials, promoting adoption, and collecting and reporting the post-pilot data (Melnyk & Fineout-Overholt, 2019). Following the pilot, the user should determine if the EBP change should be adopted into practice by comparing pre-pilot and post-pilot results. When a positive outcome is reached, key personnel should be engaged to sustain the practice change. The model suggests “hardwiring” the change into the fabric of the organization. This is accomplished by integrating the new practice into daily care. Sustainability of the new change is promoted by local champions, leadership support, educational programs, and continuous monitoring of outcomes (Melnyk & Fineout-Overholt, 2019). The final step of the Iowa Model is disseminating results.

This is accomplished by sharing project reports within and outside the organization through presentations and publications (Melnyk & Fineout-Overholt, 2019).

There are numerous reasons the Iowa Model was chosen to be used for this EBP project. The Iowa Model has been used for over twenty-five years to promote nursing excellence due to its ease of use and its applicability to a wide range of nursing topics (Hanrahan, 2019). The feedback loops and linear organization made this model especially appealing. This model was created by nurses. A model designed by nurses is best utilized by nurses. Although the EBP project team includes an assortment of interdisciplinary healthcare members, the project is being led by a registered nurse and three nurse practitioners are stakeholders.

The Iowa Model supports the EBP project because it creates a streamlined approach to addressing a practice change. Questioning current standards within the primary care setting began when a significant number of patients were coming to the office with complaints of anxiety symptoms. Recent studies have reported an increase in anxiety symptoms in adults during the COVID-19 pandemic (Daly, et. al., 2021; Vahratian, et. al., 2021). This project was conducted during the COVID-19 pandemic making this mental health issue a priority to the providers. Not only was this issue identified at the clinical site, but the need for practice change was supported by research and national and global statistics (ADAA, 2022). A team was formed that included the project leader, three physicians, three nurse practitioners, medical assistants, registered nurses, and one office manager. After an extensive systematic review of literature, an abundance of high-level evidence was obtained to support the practice change. After discussing the evidence with physicians, nurse practitioners and office manager, the team was in support of the proposed initiative.

Literature Search

Sources Examined for Relevant Evidence

A research librarian assisted with an extensive and exhaustive literature search to determine the best practices for treating adults with GAD in the primary care setting. Although

there was an abundance of literature on GAD, only the highest levels of evidence were selected for inclusion to support this EBP project. Databases searched included Joanna Briggs Institute EBP Database (JBI), Cochrane Library, Turning Research Into Practice (TRIP), Cumulative Index to Nursing and Allied Health (CINAHL), MEDLINE with Full Text (via EBSCO), and PsycInfo. A PRISMA flow diagram was created to depict references that were identified, examined, and included in this project, which can be seen in Figure 2.1. The resulting references found in the databases were carefully examined by the project leader to ensure appropriate research was chosen to support the EBP project. Exclusion criteria in all databases included research that did not include an intervention that supported the PICOT question, literature that described interventions that could not be conducted in the primary care setting, and literature focused on pediatric or pregnant patients. Studies that focused on provider perceptions or prevention were not included for review as they did not focus on the purpose statement. Only research conducted on adults over the age of 18 were considered. As the project was conducted in the primary care setting, interventions performed in psychiatric settings were excluded. Only research that could be performed by a primary care provider were included. Research on specific populations such as those previously diagnosed with COPD or identified as a specific ethnicity or culture were excluded to make the project more generalizable to the public. Any sources that were duplicated within databases were manually excluded by the project leader. Only studies that had been completed were included for review as the results determine applicability to practice, thus systematic review protocols were not included. Inclusion criteria included studies conducted in the primary care setting, studies conducted on adults over the age of 18, and studies that focused specifically on generalized anxiety disorder. After a judicious and thorough review of the eligible pieces of literature, 14 pieces of high levels of evidence were selected for inclusion to support this EBP project and address the PICOT question.

The first database searched was JBI. The search included “anxiety disorder” AND treat*. The search was limited to January 2017 to June 2022, generating 56 results. Of the 56 results, 4

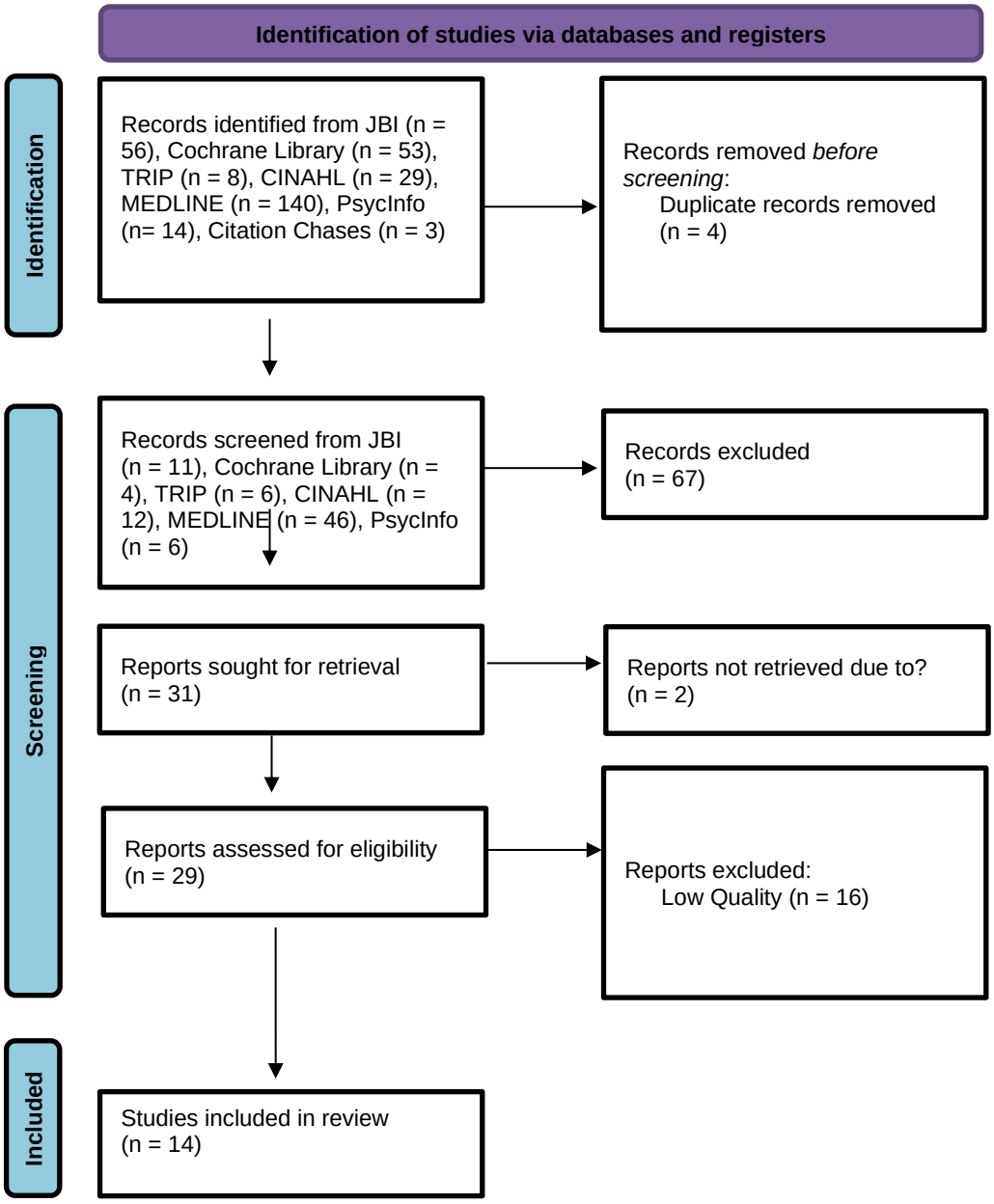
pieces of evidence (Lizarondo et al., 2021; Mathew, 2021; Pamaiahgari, 2021; Slade, 2021) were chosen for inclusion to support the EBP project after careful review, screening, and application of exclusion criteria. A similar search was conducted through the Cochrane Library by searching “anxiety disorder” AND “treat” with no Boolean operators with the same limiters as JBI. The Cochrane Library yielded 53 results. However, the project leader did not include any pieces of evidence from this database after exclusion criteria were applied. The TRIP database was used to explore clinical practice guidelines (CPGs). The search in TRIP included “title: anxiety” AND “treat*”. The search was limited to five years and CPGs only. A total of 8 relevant results were yielded. Of the 8 results, two were chosen to be included in support of the EBP project (Andrews, et al., 2018; NICE, 2021).

Because databases like CINAHL, MEDLINE, and PsycInfo have a vast amount of research within them, the search terms were expanded to include additional keywords and subject headings. Similar to the other databases, a five-year limiter (01/01/2017-06/01/2022) was applied to these searches. For the CINAHL and MEDLINE databases, the search included the major subject heading (*MM “Anxiety Disorders”)* AND treat* AND “primary care” OR “primary healthcare” OR “primary health care.” These two searches were limited to the English language and scholarly (peer-reviewed) journals only. The CINAHL search yielded 54 results and 3 pieces of evidence were chosen for inclusion (Graham, et al., 2020; Henriksson, et al., 2022; Hurtado, et al., 2020). The MEDLINE search generated 140 results and 3 pieces (Aylett, et al., 2018; Parker, et al., 2021; Williams, et al., 2018) were selected. As with JBI and the Cochrane Library databases, only high levels of evidence that supported the PICOT question were chosen to be included in the EBP project.

The final database searched was PsycInfo. Although this is a psychology specific database, it provided useful research related to GAD. Like the CINAHL and MEDLINE searches, the search included the subject heading (*MM “Generalized Anxiety Disorder*”) AND treat* AND “primary care” OR “primary healthcare” OR “primary health care.” This search was limited to the

five years (01/01/2017-06/01/2022), the English language, and scholarly (peer-reviewed) journals. This search generated 14 results and one piece of evidence was selected for inclusion (Slee, 2019). Following the application of inclusion and exclusion criteria to the selected literature, three more pieces of evidence were chosen through citation chasing. Firth, et al. (2017) was citation chased from Mathew (2021). Citation chasing from Pamaiahgari (2021) identified Carpenter, et al. (2018). Andrews, Basu & Cuijpers, et al. (2018) was citation chased from Andrews, et al. (2018). A PRISMA flow diagram depicts the project leader's screening method below in Figure 2.1.

Figure 2.1



Levels of Evidence

Melnyk and Fineout-Overholt's (2019) Hierarchy of Evidence was utilized to guide the project leader in determining what types of research to be included and to determine which pieces of evidence are considered reliable in addressing the clinical question. This hierarchy of evidence includes seven levels ranging from Level I being the strongest evidence and Level VII

being the weakest evidence. Level I evidence include systematic reviews (SR), meta-analyses (MA), clinical practice guidelines (CPG), and evidence summaries (ES). SRs are a compilation of what is known from homogenous randomized control trials (RCT) that address a single clinical question (Melnyk & Fineout-Overholt, 2019). MAs use a quantitative process to summarize results from multiple studies that focus a specific question (Melnyk & Fineout-Overholt, 2019). CPGs guide clinicians to make clinical decisions through recommendations supported by a systematic review of literature on a single topic (Melnyk & Fineout-Overholt, 2019). ESs are shorter in length compared to the previously described types of evidence. ESs provide general recommendations for practice and research on a particular topic and are supported by a comprehensive synthesis of literature (Melnyk & Fineout-Overholt, 2019). Single RCTs are considered level II evidence that provide detailed information about an intervention or topic that is often lacking from higher levels of evidence. For this EBP project, both level I and level II evidence were chosen to support the PICOT question: (a) two CPGS (Andrews, et al., 2018; NICE, 2021), (b) four ES (Lizarondo, et al., 2021; Mathew, et al. 2021; Pamaiahgari, 2021; Slade, 2021), (c) three combined SR and MA (Aylett, et al., 2018; Parker, et al, 2021; Slee, 2019), (d) three MA (Andrews, Basu & Cuijpers, et al. 2018; Carpenter, et al., 2018; Firth, et al., 2017), and (f) two RCT's (Graham, et al., 2020; Henriksson, et al., 2020). The author, database, and level of evidence of each source are illustrated in Table 2.1.

Analysis and Appraisal of Relevant Evidence

After determining the level of each piece of evidence, an evidence appraisal was conducted by the project leader. The Critical Appraisal Skills Programme (CASP) checklists (2020) was used to determine the quality of evidence of the two RCT (Graham, et al., 2020; Henriksson, et al., 2022), three combined SR and MA (Aylett, et al., 2018; Parker, et al., 2021; Slee, 2019), and four ES (Lizarondo, et al., 2021; Mathew, et al. 2021; Pamaiahgari, 2021; Slade, 2021. The Melnyk and Fineout-Overholt Tool (2019) was used to critically appraise the three MA (Andrews, Basu & Cuijpers, et al. 2018; Carpenter, et al., 2018; Firth, et al., 2017). The

AGREE II tool was used to critically appraise the four CPG (Andrews, et al., 2018; Brouwers, et al., 2010; NICE, 2021). Both the AGREE II and the CASP tools were used because they are validated assessment tools and easy to follow. All pieces of evidence chosen were appraised as strong. Table 2.1 serves as a summary of the quality of evidence and the appraisal tools used. A summary of the evidence can be found in Appendix A.

Table 2.1

Summary of Evidence

Author/yr	Database(s)	Level of Evidence/Type	Quality/Tool
Andrews, et al. (2018).	TRIP	I/MA	High level/Melnyk & Fineout
Andrews, Basu, & Cuijpers, et al. (2018).	TRIP	I/CPG	High level/AGREE II
Aylett et al. (2018).	MEDLINE	I/SR&MA	High level/CASP
Carpenter et al. (2018).	Citation Chase	I/MA	High level/Melnyk & Fineout
Firth, et al. (2017).	Citation Chase	I/MA	High level/Melnyk & Fineout
Graham, et al. (2020).	CINAHL	II/RCT	High level/CASP
Henriksson, et al. (2022).	CINAHL	II/RCT	High level/CASP
Lizarondo & Magtoto (2021).	JBI	I/ES	High level/CASP
Mathew, et. al. (2021).	JBI	I/ES	High level/CASP
NICE (2021).	TRIP	I/CPG	High level/AGREE II
Pamaiahgari, et. al. (2021).	JBI	I/ES	High level/CASP
Parker, et al. (2021).	MEDLINE	I/SR&MA	High level/CASP
Slade (2021).	JBI	I/ES	High level/CASP
Slee, et al. (2019).	PsycInfo	I/SR&MA	High level/CASP

Note: RCT = randomized control trial; CPG = clinical practice guidelines; ES = evidence summary; SR = systematic review; MA = meta-analysis; SR&MA = systematic review/meta-analysis

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

To address the clinical question, 14 relevant, high-level, and high-quality evidence were selected (Andrews, et al., 2018; Andrews, Basu, & Cuijpers, et al., 2018; Aylett, et al., 2018; Carpenter, et al., 2018; Firth, et al., 2017; Graham, et al., 2020; Henriksson, et al., 2022; Lizarondo & Magtoto, 2021; Mathews, 2021; NICE, 2021; Pamaiahgari, et al., 2021; Parker, et al., 2021; Slade, 2021; Slee, et al., 2019) and synthesized into three themes. The three themes for the treatment of adults with GAD in the primary care setting include: (a) cognitive behavioral therapy (CBT), (b) lifestyle modifications, and (c) pharmacotherapy.

Cognitive Behavioral Therapy (CBT)

CBT was found to be one of the most employed interventions for the treatment of GAD in the literature. The evidence suggests CBT should be considered as a first line treatment option for GAD (Andrews, et al., 2018; Andrews, Basu, & Cuijpers, et al., 2018; Carpenter, et al., 2018; NICE, 2021; Pamaiahgari, 2020; Parker, et al., 2021). CBT interventions aim to reduce maladaptive beliefs about the likelihood and true risk of anticipated harms to reduce psychological suffering by increasing self-efficacy in managing anxiety (Carpenter, et al., 2018). This is accomplished through various cognitive restructuring and behavioral techniques to reduce the exaggerated perception of a threat (Carpenter, et al., 2018). Overwhelming evidence demonstrated that CBT is moderately efficacious in treating GAD when compared to placebo (Andrews, et al., 2018; Carpenter, et al., 2018; NICE, 2021; Pamaiahgari, 2020; Parker, et al., 2021).

CBT is versatile in that in can be implemented in various settings and through different modes of delivery. CBT is primarily used in the psychiatric setting; however, evidence demonstrates that it can be effective in the primary care setting as well (Andrews, et al., 2018; Pamaiahgari, 2021; Parker, et al., 2021). CBT can be implemented through a face-to-face visit, virtual visit, or digitally using a smartphone, tablet, or computer (Andrews, et al., 2018;

Carpenter, et al., 2018). Face-to-face CBT has been the most extensively studied mode of delivery and was found to be effective in a meta-analysis conducted by Andrews, et al. (2018). Despite the effectiveness of CBT in primary care, barriers exist that limit its use by primary care providers (Andrews, Basu & Cuijpers, et al., 2018). Primary care providers are not routinely trained to implement face-to-face CBT. Furthermore, time pressures and associated costs in the office setting do not allow for face-to-face CBT interventions to be executed.

The rapidly growing field of digital CBT (dCBT) aims to reduce these barriers. Digital CBT is accessed by a computer or through an application on a smartphone or tablet (Andrews, et al., 2018; Firth, 2017; Graham, et al., 2020). Many advantages exist with dCBT including reduced costs and broader availability to patients (Andrews, et al., 2018). Compared to face-to-face CBT, evidence suggests that dCBT is equally effective in reducing anxiety symptoms and improving quality of life (QOL) (Andrews, et al., 2018; Andrews, Basu & Cuijpers, et al., 2018; Mathew, 2020). Another advantage of dCBT is that is can be conducted on the patient's own time and in any location the patient has an internet connection.

There are many dCBT applications available to the public, yet few have undergone extensive research (Mathew, 2020). One challenge to successful treatment of GAD using dCBT is real world engagement. App-based CBT produces early engagement, but adherence has been found to drop dramatically over the first two weeks (Graham, et al., 2020). Graham, et al (2020) attempted to combat adherence challenges using IntelliCare©, a coached mobile app platform for the treatment of anxiety in primary care patients. An RCT showed that the use IntelliCare resulted in a greater reduction in symptoms and effects were sustained at the 16-week follow up (F 2,33 316 = 15.9; $P < .001$) (Graham, et al., 2020). Firth, et al. (2017) conducted a meta-analysis of RCT's aimed at determining the effectiveness of dCBT through smartphone applications in reducing anxiety symptoms. The MA concluded that this mode of delivery is promising and efficacious in managing anxiety with an emphasis on the MyCompass© application having a moderate effect size on anxiety in comparison to both the active control and

waitlist conditions (Cohen's d = 0.40 and 0.47, respectively) (Firth, et al., 2017). This smartphone application combines self-monitoring with various CBT modules, problem solving, and positive psychology.

Patients should be educated on how to properly use dCBT before beginning the intervention (Andrews, et al., 2018). The application involves lessons that are interactive and supported by audio, video, or an illustrated storyline. Current courses typically contain a number of weekly lessons, followed by specific tasks to be done in the following week. This allows patients to put what they have learned from the dCBT into action (Andrews, et al., 2018). Courses often track symptom levels and when a level of severity has been reached, the individuals are advised to seek additional help (Andrews, et al., 2018).

Although published literature does not systematically evaluate adverse effects associated with CBT, problems and barriers still exist. Face-to-face CBT requires training and expertise. If poorly conducted or poorly paced, the intervention may be ineffective or emotionally distressing leading to nonadherence. It is important to note CBT may increase symptomatic distress in the short term and there is a dropout rate comparable to that of pharmacotherapy. Overall, the body of evidence does not suggest the CBT produces serious adverse effects (Carpenter, et al., 2018).

Lifestyle Modifications

Evidence suggests that certain lifestyle modifications not only reduce anxiety symptoms but can have a positive influence on overall health (Andrews, et al., 2018; Aylett, et al., 2018; Lizarondo, 2021; Henriksson, 2022). Education on these lifestyle changes can be taught in the primary care setting through educational pamphlets and having constructive conversations about current health habits (NICE; 2021). Current research indicates that exercise can reduce anxiety symptoms associated with GAD (Aylett, et al., 2018; Lizarondo, 2021; Henriksson, 2022). Providing patients with an evidence-based exercise regimen can be done alone or in combination with CBT (Lizarondo, 2021). Henriksson, et al. (2022) conducted an RCT that

examined the effects of an exercise intervention on anxiety disorders in the primary care setting over twelve weeks. The exercises included cardiorespiratory and resistance training exercises at different intensities (Henriksson et al., 2022). Participants were divided into three groups: (a) control group: a single physiotherapy session with general exercise education, (b) intervention group 1: low-intensity exercise training (12 weeks, three times per week), and (c) intervention group 2: moderate to high intensity exercise training (12 weeks, three times per week). The RCT observed a significant reduction in anxiety from baseline to post-treatment when comparing both exercise groups with the control group (CI 1.34-9.76, CI 1.66-14.39, respectively) (Henriksson, et al., 2022). A meta-analysis conducted by Aylett, et al. (2018) found similar results that supported exercise regimens as an effective treatment for GAD. Although the evidence suggests that both moderate level and high-level exercise regimens reduce anxiety scores, higher intensity exercises may have an advantage over lower intensity exercises in reducing scores (Aylett, et al., 2018). Aylett, et al. (2018) suggests using anaerobic and resistance training exercises to be performed 3 times a week for at least 30 minutes.

There are other lifestyle modifications supported by evidence to improve anxiety symptoms in GAD. Andrews, et al., (2018) emphasizes the importance of educating patients on their diagnosis. Symptoms of GAD pose adaptive aspects, such as increased alertness. However, when anxiety is severe, it can be debilitating. This phenomenon is known as the Yerkes-Dobson curve (Andrews, et al., 2018). Providing education to the patient can be extremely beneficial because the person may often feel that their experiences are unique or frightening (Andrews, et al., 2018). This can be done through educational pamphlets given to patients at their office visits, specifically, the first interaction with the project leader and introduction to the EBP project (NICE, 2021). The Royal College of Psychiatrists and NICE (2021) have created downloadable templates for providers (NICE, 2021; Andrews, et al., 2018). Promotion of healthy eating and good sleep hygiene is necessary. Education on reducing the consumption of caffeinated beverages, tobacco and alcohol should be provided to the patient

(Andrews, et al., 2018). While these interventions are beneficial to improving GAD symptoms, they are often used in combination with CBT or pharmacotherapy (Andrews, et al., 2018).

Pharmacotherapy

Pharmacotherapy is the typically the first line treatment for GAD in the primary care setting as it is easy to prescribe, less resource intensive, and current research demonstrates its superiority over psychological interventions (Andrews, et al., 2018; Slade, 2021; Slee, et al., 2019). Primary care providers often choose pharmacotherapy for the treatment of GAD because it has a relatively low cost and the evidence has shown that medications are effective in reducing GAD symptoms (Andrews, et al., 2018; Slee, 2019). The objective of pharmacotherapy is to reduce symptoms and restore function (Slee, 2019).

Selective serotonin reuptake inhibitors (SSRI) and selective norepinephrine reuptake inhibits (SNRI) are the first line medications for GAD treatment. Evidence has shown that initiating an SSRI or SNRI has improved anxiety symptoms to the point that patients no longer meet GAD criteria in about half of patients in clinical trials (Andrews, et al., 2018). This supports the need for additional interventions in combination with pharmacotherapy. Side effects have been associated with these medications including initial exacerbation of anxiety, nausea, headache, sleep disruption, weight gain, and sexual dysfunction (Andrews, et al., 2018; Slee, et al., 2019). It is important for providers to be aware of the risk of suicidal thoughts in younger people when starting an SSRI and the patient should be educated on what to if they experience suicidal thoughts (Andrews, et al., 2018). Due to side effects, some patients may find the medication intolerable and abandon treatment. Slee, et al. (2019) suggests that failure of the first pharmacotherapy option may not be a reason to stop pharmacotherapy all together and that another option should be trialed.

There are several SSRI and SNRI available in the United States. Unfortunately, there is no incentive for pharmaceutical companies to conduct comparison trials for GAD to determine which medications is most efficacious and due to the cost of clinical trials (Slee, et al., 2019). For

this reason, it is difficult to determine which SSRI is most effective and tolerable. Slee et al. (2019) conducted a systematic review and network meta-analysis of RCTs and found that duloxetine, venlafaxine, and escitalopram were the most efficacious and tolerable compared to placebo.

There are other medications beyond SSRI and SNRI antidepressants that have been trialed for the treatment of GAD. Pregabalin has also been researched and demonstrated efficacy in GAD treatment (Slee, 2019). Pregabalin, a gamma-aminobutyric acid analog (GABA-A), has been trialed for the treatment of GAD and found to be efficacious in reducing anxiety symptoms but is not a first line treatment option due to evidence supporting SSRI/SNRI therapies (Slade, 2021; Slee, et al., 2019). Benzodiazepines were the first medications used routinely in clinical practice for anxiety symptoms. Although the medications have anxiolytic effects, it has limited use in practice due to its potentially fatal interactions with alcohol and opioids, potential for addiction and dependence (Andrews, et al., 2018; Slee, et al., 2019).

Recommendation for Best Practice

Based on the synthesis of literature, the best practice for addressing the clinical problem is a combination of CBT, lifestyle modifications, and pharmacotherapy. CBT should be conducted through smartphone or internet-based computer applications. A randomized controlled trial has shown that MyCompass©, a smartphone and computer based digital CBT application is effective in reducing anxiety symptoms in primary care patients (Cohen's d = 0.40 and 0.47, respectively) (Firth, et al., 2017). MyCompass© was chosen over others due to its efficacy, easy navigation, and it is free to the public. MyCompass is a web-based digital CBT application that can be accessed on a computer, smartphone, or tablet with internet connection. MyCompass© is a combination of psychological modules for CBT, self-monitoring using questionnaires, problem solving and positive psychology (Firth, et al., 2017).

Lifestyle modifications should also be employed for GAD treatment. Evidence shows moderate and high intensity level exercises improve GAD scores (Aylett, et al., 2018;

Henriksson, et al., 2022; Lizarondo, et al., 2021). Although moderate/high intensity exercises had greater results than moderate level exercise, either is acceptable in practice as both were shown to reduce GAD scores (Henriksson, et al., 2022). Both low and moderate/high intensity exercise training resulted in an average of approximately 5 points greater decrease in both scores compared to control treatment (Henriksson, 2022). Higher intensity exercise had a higher effect size (Henriksson, 2022). Education on cardiopulmonary and resistance training should be provided to patients (Aylett, et al., 2018; Henriksson, et al., 2022). Furthermore, education on proper diet and good sleep hygiene were supported by evidence (Andrews, et al., 2018). This includes limiting the consumption of caffeine, tobacco, or alcohol (Andrews, et al., 2018). A self-reported questionnaire will be completed during the same time GAD scores are collected to determine if patients are completing the exercise and nutrition recommendations.

Lastly, pharmacotherapy can be employed in the primary care setting for treatment of GAD. Although there is a vast amount of medication options available, an SSRI or SNRI should be the first line treatment option (Andrews, et al., 2018; NICE, 2021; Parker, et al., 2021; Slee, et al., 2019; Slade, 2021). This medication should be prescribed by the six providers at the clinical site. Education regarding side effects, its basic mechanism of action, and contraindications should be provided to the patient.

NICE (2021) and Andrews, et al. (2018) suggest using a stepped approach to GAD management. NICE (2021) has four steps to GAD management. Step one involves assessing the patient's GAD severity, providing education on lifestyle modification including exercise and nutrition recommendations, and inquiring of risk factors. This information should guide clinical judgement. If the patient has marked functional impairment, CBT should be employed for a minimum of 6 weeks in combination with lifestyle modifications. This can be face-to-face or dCBT (NICE, 2021). Marked functional impairment should be determined by asking the patient about the number, severity, and duration of symptoms, the degree of distress they are experiencing and using the validated assessment tool GAD-7 questionnaire to help determine GAD severity

(NICE, 2021). Patients with a GAD-7 score of 10 or greater is considered severe and pharmacotherapy should be considered (Spitzer, et al., 2006). If the patient is experiencing severe anxiety symptoms based on the GAD-7 scale with functional impairment, CBT combined with pharmacotherapy should be initiated in combination with education about lifestyle modifications. Functional impairment may include social or occupational dysfunction such as avoiding social interaction or missed workdays (NICE, 2021). The patient's preferences should be considered, as there is no evidence that one SSRI is superior to another (Slee, 2019). The effectiveness of the drug should be reviewed every two to four weeks during a three-month period and then every three months thereafter (NICE, 2021).

In conclusion, the synthesis of literature supports a stepped approach to the treatment of GAD in primary care using multiple interventions. A combination of dCBT using the MyCompass© web-based dCBT, lifestyle modification, and pharmacotherapy was utilized.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Participants and Setting

This EBP project took take place in Valparaiso, Indiana at a primary care office that serves both pediatric and adult patients. The providers treat a wide variety of patients with a range of morbidities with collaboration of providers from other specialties. The medical director of the facility was agreeable to being the project facilitator and having this project implemented in the primary care office under his supervision. Five physicians and two nurse practitioners were agreeable to implementing this EBP project within their adult patient populations.

Pre-Intervention Group Characteristics

The patient population consists of adult and pediatric patients, but for the purpose of the project only adults over the age of 18 were included. The current practice at the clinic site requires GAD screening routinely using the GAD-7 questionnaire. The physician at the office reported that he is currently managing the care of a total of 5,700 adult patients and 214 adults have an active diagnosis of GAD. The nurse practitioner is currently seeing 1,705 adult patients and a total of 51 have an active diagnosis of GAD. These numbers were obtained through the EMR's (Epic) Slicer Dicer technology. The data collected determined that the nearly 4% of the population seen at the clinical site has GAD. Each office visit requires anxiety and depression screening to be completed regardless of the reason for coming to the office. All providers in the office use the GAD-7 scale to screen anxiety in adult patients regardless of if the patient comes with a specific complaint, annual physical, or psychiatric symptoms.

To be eligible for participation in the project, participants must have been able to read, write, and speak English. Participants could identify as male, female, or non-binary. It was also important to determine if the patient has adequate internet access and smartphone access to download the CBT application. If they do not have smartphone capabilities, they could not

participate in the project. Any patient that is under the age of 18 or those who are currently pregnant were excluded from participation. Anyone with a current history of alcohol or substance abuse or dementia were not included in this project as the treatment options may be different for this population. Patients in recovery from substance abuse were included for participation.

To implement the practice change, participants were recruited at the end of their office visits with their providers. If the patient met criteria for inclusion in the project, the providers would briefly explain the project to the patient and determine their interest in participating. Every participant was informed that their involvement in the project would not have an impact on the care given from the provider. If the participant consented to participation, the project leader provided the participants with an educational pamphlet regarding the purpose of the project, the interventions involved, and length of project. The day that the patient agreed to participate was considered the baseline day and a GAD-7 score was obtained by the project leader at the time of visit. The project leader obtained demographic data using a standardized form created by the project leader.

Patients with a current diagnosis of GAD who were already prescribed pharmacotherapy including SSRI/SNRI, benzodiazepines, or other therapies were included in this project. Allowing these individuals to participate increased the sample size and it would not be fair to exclude them simply because of an established diagnosed and receiving other treatment. GAD-7 scores, the reinforcement of education, and assessment of intervention adherence were assessed through phone calls or text messaging. The scores were assessed at two weeks, four weeks, and eight weeks after initiating the intervention. The intervention concluded at eight weeks.

Intervention

The intervention to address the clinical problem was be a combination of treatments based on a systematic and thorough synthesis of evidence (Andrews, et al., 2018; Andrews, Basu, & Cuijpers, et al., 2018; Aylett, et al., 2018; Carpenter, et al., 2018; Firth, et al., 2017; Graham, et al., 2020; Henriksson, et al., 2022; Lizarondo & Magtoto, 2021; Mathews, 2021;

NICE, 2021; Pamaiahgari, et al., 2021; Parker, et al., 2021; Slade, 2021; Slee, et al., 2019). Using a stepped approach to care (Andrews, et al., 2018; NICE, 2021), the treatment options included dCBT, lifestyle modifications, and pharmacotherapy. From the project leader's previous clinical experience at the site, it was clear that CBT was not being implemented at the clinical site. This is most likely due to lack of experience with CBT, lack of training, and time constraints. For this reason, dCBT can be used a viable option to implement CBT in the primary care setting (Andrews, Basu & Cuijpers, 2018; Andrews, et al., 2018; Carpenter, et al., 2018; Firth, et al., 2018; Graham, et al., 2020; Mathew, 2020; Pamaiahgari, 2020). Digital CBT was chosen to be implemented using a smartphone application with specific instructions on how to navigate the application effectively. Participants were instructed on how often to use the application and advised to contact the project leader directly for assistance via phone call or text message. This information was provided to participants upon consenting to participate and was included in the pamphlet provided to them as described above.

The dCBT application chosen was based on current evidence, accessibility, and cost-effectiveness. Evidence supports the MyCompass© application for the treatment of GAD using dCBT (Firth, 2017). The MyCompass© web-based CBT is not available as a downloadable smartphone application; however, it is available on a home computer, tablet or smartphone that has internet capabilities (Firth, et al., 2017). This web-based form of CBT begins by having the user create a profile and completing a depression and anxiety questionnaire. The program recommends modules tailored to address specific behavior patterns and experiences based on the questionnaire answers. The participant were instructed to complete one module (100%) per week.

Lifestyle modifications and education about GAD were also be integral part of the intervention. Education handouts were be provided to the participants. An informational brochure was created by the project leader that gives more detailed information regarding the interventions (Appendix B). The document described health eating options, exercise regimens,

ways to improve sleep, and the importance of decreasing consumption of caffeine, tobacco, and alcohol. There was an in-depth description on the nature of CBT and an easy-to-follow explanation of how SSRI/SNRI medications work to improve GAD symptoms during first encounter with participants.

The providers at the clinic prescribed pharmacotherapy to those that agreed to participant in the project and met the criteria for starting medication. Education was provided by the project leader and the providers describing how the medication works, side effects, and dosage. The participants were advised to take the prescription as prescribed. Those with concerns regarding the medication or who want to stop the medication were instructed to contact the provider. It was important for the patients to understand that SSRI/SNRI medications do not work immediately; the response to treatment is delayed by two to four weeks or longer (De Piro, et al., 2017). Participants starting an SSRI were advised that studies have shown that in a minority of patients under the age of 30 there is a heightened risk of suicidal thinking (NICE, 2021). Anyone is this age group that is receiving these medications should be seen within one week of prescribing and monitored weekly for the first month (NICE, 2021).

Comparison

The project leader and the six providers included in this project determined the prevalence of GAD at the clinical site using the electronic medical record (EMR) (Epic) Slicer Dicer technology to identify potential participants for the project. Demographic data collected from the participants included age, gender, and race/ethnicity. Because some patients do not like to report their educational level or employment status, this information was not collected.

Outcomes

The primary outcome of the EBP project was to compare GAD-7 scores before and after intervention. These GAD-7 scores were recorded at two-week, four-week, and eight-week intervals. The GAD-7 scale was established in 2006 and is widely used in practice. The GAD-7 scale is a seven-item self-reporting questionnaire to screen and measure the level of severity of

anxiety symptoms (Spitzer, et al., 2006). The scale ranks anxiety severity using scores. A score of 0-4 is considered minimal or no anxiety, 5-9 indicates mild anxiety symptoms, a score of 10-13 is considered moderate severity, and 14-21 is scored as severe anxiety symptoms (Spitzer, et al. 2006). The majority of the evidence used for this project used this measurement tool and it has been validated as effective in screening and diagnosing the severity of GAD in the primary care setting (Andrews, Basu, & Cuijpers, et al., 2018; Firth, et al., 2017; NICE, 2021; Spitzer, et al., 2006). Spitzer, et al. (2006) determined that the GAD-7 was a valid measurement tool with excellent internal validity (Cronbach's alpha = 0.92). Test-retest reliability indicated good procedural reliability with an intraclass correlation of 0.83 (Spitzer, et al., 2006).

To assess the efficacy of the intervention, a GAD-7 score was obtained from participants prior to beginning the intervention by the providers. The project leader collected the GAD-7 scores from participants at two weeks, four weeks, and eight weeks. The purpose of collecting the GAD-7 scores in intervals is for comparison of data from baseline through the course of implementation. The project leader conducted GAD-7 questionnaires either over the phone or through text depending on the patient's preference. By assessing the GAD-7 scores at intervals, the data can show progression on GAD symptoms over time. A repeated measures ANOVA was conducted measuring the mean differences between baseline and two weeks, baseline and four weeks, and baseline at eight weeks. This statistical method was chosen to measure change over time and at what point the change occurred.

Time

The project leader implemented the project in the fall of 2022, between November and December. Because participants had different start times, data collection continued into the first week of January 2023.

Protection of Human Subjects

It is essential to protect human subjects throughout the project. The project leader completed IRB training about the protection of human subjects through the Collaborative Institute Training initiative before beginning implementation of the intervention. Because this is an evidence-based practice project and the project leader is not producing original research, the project leader was exempt from IRB oversight through the Valparaiso University Institutional Review Board (IRB). The project leader also obtained IRB approval from the institution the clinical site is affiliated with. The participants were made aware that their participation was voluntary and that they were able to withdraw from participation at any time. All participation and data collected from the project was confidential. Each participant was given a code number. Confidentiality of participants' identifying information will be upheld by way of password protected laptop and Excel sheet. The separate passwords were known only by the project leader. At each two-week interval, the project leader contacted participants via phone call to obtain GAD-7 scores. The Excel spreadsheet was created to document the scores to track each participant's progression. There was no reward for participating in this project and they could withdraw at any time.

CHAPTER 4

FINDINGS

This project aimed to improve the treatment of adults with generalized anxiety disorder in the primary care setting after an assessment of needs of a primary care clinic. After rotating at a primary care clinic, the project leader began noticing the high influx of patients being seen for anxiety symptoms, it was decided that there was a need for improvement of treatment of GAD. A literature review was conducted to determine best practice evidence. The evidence supported a combination of interventions should be employed. The purpose of this project was to improve outcomes of patients with GAD by improving treatment practices at this primary care clinic using best treatment recommendations. Specifically, the project focused on the following PICOT question: In adults, over the age of 18, who have been diagnosed with generalized anxiety disorder (GAD), does the combination of digital cognitive behavioral therapy (CBT) through a smartphone application, lifestyle modification education, and pharmacotherapy improve patient's GAD-7 scores over an 8-week period in the primary care setting?

Participants

Of the potential project participants at the clinical location, 91.1% identified as Caucasian. This is similar to the demographics in the community as Valparaiso, IN is 86.3% Caucasian (United States Census Bureau, 2021). However, when comparing the demographics of the community compared to the demographics of the potential project participants or those who participated, there was a significant difference. Over the course of the three-month recruitment process, the project leader met with 64 potential participants. Twenty-three participants initially agreed to participate in the project (35.9%). Of the initial 23 participants, 15 (62.5%) identified as Caucasian, five participants (20.8%) identified as Hispanic or Latino, one participant identified as Black or African American (4.3%), one identified as Native American or Pacific Islander (4.3%) and one identified as Asian (4.3%). The demographics collected are inconsistent with

demographics of the community (United States Census Bureau, 2021). The average age of participants that agreed to participate was 32.4 years old, and the average age of those that completed the 8-week intervention was 33.1 years old. Of the 23 participants that completed the baseline screening, 16 identified as female (69.6%), 6 identified as male (26.1%), and 1 participant identified as gender variant/non-conforming (4.3%). This is an expected finding as women are twice as likely to be diagnosed with GAD than males (ADAA, 2022).

Although there was a higher rate of female participants that originally agreed to participate, there was a higher attrition rate among females. There were six females (37.5%) who completed the 8-week intervention. There were six males (100%) that completed the 8- week intervention. One participant that identified as gender variant/non-conforming completed the 8-week intervention. Of the 15 participants that identified as Caucasian or White, 9 (60%) completed the 8-week intervention. There were five participants that identified as Hispanic/Latino that completed the baseline screening, and one (20%) participant completed the 8-week intervention. There was one participant that identified as Black or African American and completed the eight-week intervention. There was one participant that identified as Native American/Pacific Islander who completed the eight-week intervention. There was one participant that identified as Asian and completed the eight-week intervention. Table 4.1 outlines the demographics of the participants below.

Table 4.1

Demographic characteristics

Characteristic	Baseline *n* = 23	8 weeks *n* = 13
Age (*M*)	32.4	33.1
Age (*Range*)	42.0	42.0
Gender		
Female	16 (69.6%)	6 (46.1%)
Male	6 (26.1%)	6 (46.1%)
Gender Variant/ Non-conforming	1 (4.3%)	1 (4.3%)
Race		
Caucasian	15 (65.2%)	9 (69.2%)
Black or African American	1 (4.3%)	1 (7.7%)
Hispanic/Latino or Spanish Origin	5 (21.7%)	1 (7.7%)
Native American or Pacific Islander	1 (4.3%)	1 (7.7%)
Asian	1 (4.3%)	1 (7.7%)

Changes in Outcomes

Implementation of an 8-week intervention combining *d*CBT, lifestyle modifications, and pharmacotherapy improved patient GAD-7 scores measured by reported scores of the Generalized Anxiety Disorder 7-item (GAD-7) screening tool over an 8-week period. There were statically significant differences among the participants scores from baseline compared to 8-week intervention scores. The primary outcome demonstrated that the multimodal intervention decreased GAD-7 scores over eight weeks while the secondary outcome showed that the intervention became effective 4 weeks after implementation of the intervention.

Statistical Testing and Significance

All data were entered into International Business Machines Corporation's (IBM's) Statistical Package for the Social Sciences (Version 25), also known as SPSS®, for analysis. The project leader utilized the SPSS® step-by-step guide by Cronk (2020) to perform analysis and interpret the results. The primary outcome was evaluated using a paired samples *t* test to specifically address the PICOT question. The secondary outcome was evaluated using a repeated measures ANOVA to determine at what point the intervention became statistically significant. Descriptive statistics of both the primary and secondary outcomes served to determine statical significance. The participants operated as their own comparison for the primary and secondary outcomes.

Analysis of the Instrument

A Cronbach's alpha is a measure of internal consistency and determines if homogeneity exists between all items on a questionnaire measuring the same concept (Dougherty, 2019). This test was performed to determine the internal consistency of the GAD-7 screening instrument used at baseline, week two, week four and week eight intervals. The Cronbach's alpha score determined the GAD-7 had excellent internal consistency ($\alpha = 0.95$).

Findings

Primary Outcome

Mean GAD-7 Scores From Baseline to Eight Weeks. The primary outcome of pre- and post- intervention GAD-7 scores was evaluated with a paired *t* test. The mean pre-intervention and post-intervention GAD-7 scores were 8.91 (*SD* = 4.71) and 5.62 (*SD* = 3.75), respectively. Mean GAD-7 scores decreased by 3.29 in participants that completed the 8-week intervention. The reduction in mean GAD-7 scores was statistically significant (t (13) = -3.975, $p < 0.05$) (see Table 4.2).

Secondary Outcomes

Mean GAD-7 Scores Over Time. The secondary outcome of mean GAD-7 scores at two-week intervals was evaluated using a one-way repeated measures ANOVA. GAD-7 scores were obtained at two-weeks, four-weeks, and eight-week intervals. Results from the one-way repeated measures ANOVA determined that difference in the mean GAD-7 scores became statistically significant after four weeks of implementation (F (1,12) = 42.783, $p < 0.01$). Mauchly's Test of Sphericity determined that the assumption of sphericity had not been violated, $X^2(5) = 17.752$, $p = 0.003$. Mauchly's Test of Sphericity is used to determine if the variances of the differences between combination of related groups are not equal and assesses the risk of a Type I error (Laerd Statistics, 2018). Follow-up protected dependent *t* tests were conducted as a post-hoc analysis. The follow-up *t* test revealed decreased mean GAD-7 scores at two weeks from baseline (*M* = 0.6, *SD* = 2.1, *p* = -1.06), at 4 weeks from 2 weeks (*M* = 1.8, *SD* = 2.5, *p* = -2.60), and again at 8 weeks from 4 weeks (*M* = 1.6, *SD* = 1.2, *p* = -4.89). (See Table 4.3).

Table 4.2

Paired t tests comparing baseline GAD-7 Scores to 8-week GAD-7 Scores

	Mean (*SD*)	*t*	*df*	*p*
Paired GAD-7		-3.975	12	.002
Pre-Intervention	9.62 (5.4)			
Post-intervention	5.62 (3.75)			

Table 4.3

Repeated Measures ANOVA comparing GAD-7 scores at baseline, 2 weeks, 4 weeks, and 8 weeks

Variable	Mean (*SD*)	*F*	*p*
GAD-7 (*n* = 13)			
Baseline	9.6 (5.37)	42.783	.000
2 Weeks	9.0 (5.02)		
4 Weeks	7.2 (4.23)		
8 Weeks	5.6 (3.75)		

Table 4.4

Protected t tests of GAD-7 scores at baseline, 2-weeks, 4-weeks, 8-weeks

Variable	Mean (SD)	*t*	*df*	*p*
GAD-7 (*n* = 13)				
Baseline vs. 2-weeks	0.6 (2.1)	-1.055	12	.312
2-weeks vs. 4-weeks	1.8 (2.5)	-2.599	12	.023
4-weeks vs. 8-weeks	1.6 (1.2)	-4.882	12	.000

Effect of Independent Variables. Correlational designs were used to determine if there was a correlation between the independent variables assessed and GAD-7 scores at 8-weeks post-intervention. The independent variables included exercise per week, exercise per hour, dCBT use, smoking status, alcohol intake, caffeine intake, diet, and pharmacotherapy. Chi square tests were used to determine correlation between dCBT use, smoking status, diet, and pharmacotherapy as these were nominal level data. A Pearson's *r* was calculated to determine any correlation between GAD-7 scores and exercise per week, exercise per hour, alcohol intake, and caffeine intake as these were ratio/interval level data. There was significant correlation among some of the independent variables ($p > 0.05$).

A Pearson correlation coefficient was calculated for the relationship between GAD-7 scores and the number of times a participant engaged in physical exercise per week. A small negative correlation was found (r (12) = -.138, $p > 0.05$). A Chi square test was used to compare GAD-7 scores and the use of dCBT weekly. The relationship between these variables was significant (X^2 (12, N = 13) = 4.038, $p > 0.05$)). A Chi square test was also used to compare GAD-7 scores and pharmacotherapy use. The relationship between these variables was significant (X^2 (12, N = 13) = 16.521, $p > 0.05$)).

Table 4.5

Correlation Between Independent Variables and GAD-7 Scores

Variable	Pearson's *r*	Chi-Square	Sig. (2-tailed)
Exercise/Week	-.138		.653
Exercise/Hour	-.387		.192
dCBT Use		4.038	.672
Smoking Status		9.159	.165
Alcohol Intake	-.289		.338
Caffeine Intake	-.478		.099
Diet		7.635	.266
Pharmacotherapy		16.521	.556

CHAPTER 5

DISCUSSION

The purpose of the evidence-based practice project was to address the following PICOT question: In adults, over the age of 18, who have been diagnosed with generalized anxiety disorder (GAD), does the combination of digital cognitive behavioral therapy (CBT) through a smartphone application, lifestyle modification education, and pharmacotherapy improve patients' GAD-7 scores over an eight-week period in the primary care setting? An eight-week multimodal intervention was implemented that included dCBT, education on lifestyle modification, and pharmacotherapy. GAD-7 scores were obtained at baseline during initial encounter with participants and then scores were obtained at two-week, four-week, and eight-week intervals to determine if the intervention reduced GAD-7 scores.

There was a total of thirteen participants that completed the 8-week intervention. Of the thirteen participants, three were diagnosed with GAD during their initial encounter and screening. The remaining 10 participants had a previous diagnosis of GAD and were coming to the office for routine follow-up. Characteristics of the initial participants were consistent with those found in the literature (Andrews, et al., 2018; NICE, 2021; Parker, et al., 2021). Females made up the majority of the participants (69.6%). Females are more likely to be diagnosed with GAD than males (Andrews, et al., 2018). Munir & Tavok (2021) report that Caucasians are more likely than other race/ethnicities to be diagnosed with GAD. This was also consistent with the demographics of the 23 participants who initially agreed to participate in the project. Of the 23 participants, 65.2% identified as Caucasian or White. This is likely due to those that identify as White or Caucasian make up the majority of the patients in the setting. The average age of the initial 23 participants is similar to the average age of GAD onset within the literature. Munir & Tavok (2021) states that the median age for GAD diagnosis is 30 years old. The median age of onset is 30 years old (Stein, et al., 2019). Although the average age of participants is slightly higher, it is

important to note that nearly half (47.8%) of the initial participants were under the age of 30. The CDC reports that the highest prevalence of GAD in the United States is in those ages 18 to 29 years old (CDC, 2021).

Explanation of Findings

Primary Outcome

GAD-7 Scores. The data analysis for all participants that completed the eight-week intervention demonstrated a significantly significant decrease in GAD-7 scores compared to baseline (t (13) = -3.975, $p < 0.05$). This means that the GAD-7 scores decreased after implementing the multimodal intervention of lifestyle modification, dCBT, and pharmacotherapy, which is consistent with evidence found in the literature (Andrews, et al., 2018; Aylett, et al., 2018; Carpenter, et al., 2018; Firth, et al., 2017; Graham, et al., 2020; Henriksson, et al., 2022; Parker, et al., 2021; Slee, 2019). The average baseline GAD-7 score of 13 participants was 9.62. This score is considered mild to moderate in severity. However, it is important to note that 86.9% of the initial participants were taking some form of pharmacotherapy upon beginning the interventions. Because some participants were already being treated for GAD symptoms, the average severity of symptoms may be lower than when each participant initially started medication. To meet criteria for a diagnosis of GAD, patients must present with a GAD-7 score of 10 or higher (Locke, et al., 2015). Patients with scores of 10 or higher have an increased risk of functional impairment (Locke, et al., 2015). As many of the participants were prescribed pharmacotherapy prior to the intervention, it is likely the combination of lifestyle modifications and dCBT were influential on decreasing GAD-7 scores. Following the eight-week intervention, the average GAD-7 score for the 13 participants was 5.62. This average score is considered mild in severity. The literature suggests that interventions to manage GAD take time, sometimes up to 12 weeks or longer (Andrews, Basu, & Cuijpers, et al., 2018). Participants were encouraged to continue these interventions after the eight-weeks had concluded, especially for those that continued to have an elevated GAD-7 score. The results suggest that the use of more than one

intervention simultaneously decreases GAD-7 scores. NICE (2021) clinical practice guidelines and Andrews, et al. (2018) support the use of a combination of interventions to manage GAD.

Secondary Outcomes

Two secondary outcomes were assessed using the data collected for this EBP project. GAD-7 scores were assessed over time. The effect of independent variables was assessed compared to GAD-7 scores.

***GAD-7 Scores Over Time*.** A repeated measures ANOVA was utilized to assess GAD-7 scores over time. The repeated measures ANOVA determined that there was a statistically significant decrease of GAD-7 scores after four weeks of implementation (F (1,12) = 42.783, p < 0.01). These results demonstrate that implementing a multimodal intervention requires at least four week's time for the interventions to become effective. A collaborative, pragmatic approach to treating GAD in adults is necessary for improving GAD symptoms (Andrews, et al., 2018). The results are consistent with current literature that using multiple interventions collectively improves symptoms. Andrews, et al. (2018) suggests that selection of treatment should consider the severity of symptoms, patient preferences, accessibility, costs, tolerability and safety profile. Despite use in clinical practice, there is limited research on the effectiveness of combined CBT and pharmacotherapy. No single, systematically updated consensus exists, but current treatment guidelines suggest that treatment options should be based on evidence and judgment (Szuhany & Simon, 2022). A recent meta-analysis of 52 randomized controlled trials demonstrated that combining these treatments was superior to pharmacotherapy alone (Cuijpers, et al., 2014).

There is limited data on the relapse rates of GAD when using psychological interventions. A meta-analysis of 28 randomized controlled trials of various anxiety disorders, including GAD, determined that continuing antidepressants reduces the risk of relapse and thereby improves long term prognosis (Batelaan, et al., 2017). Because participants in the project reported decreased anxiety symptoms and overall satisfaction with the interventions, the participants were encouraged to continue the interventions after eight weeks to decrease the risk of recurrence of

symptoms. Management of GAD takes time, even up to 12 weeks before seeing significant results (Andrews, Basu, & Cuijpers, et al., 2018).

***Effect of Independent Variables*.** Correlational statistics were used to determine if there was a correlation between the independent variables assessed and GAD-7 scores at 8-weeks post-intervention. Of the eight independent variables assessed, three independent variables demonstrated significant correlations between GAD-7 scores. These include the number of times a participant exercised per week, reported weekly dCBT use, and pharmacotherapy. A Pearson correlation coefficient was calculated for the relationship between GAD-7 scores and a small negative correlation was found (r (12) = -.138, $p < 0.05$). A negative correlation indicates that GAD-7 scores decreased the more participants exercised per week. A Chi square test was used to compare GAD-7 scores and the use of dCBT weekly. The relationship between these variables was significant X^2 (12, N = 13) = 4.038, $p > 0.05$). A Chi square test was also used to compare GAD-7 scores and pharmacotherapy use. The relationship between these variables was significant X^2 (12, N = 13) = 16.521, $p > 0.05$).

The other independent variables assessed included number of minutes participants exercised per session, alcohol consumption, caffeine consumption, smoking status, and diet. Correlational designs did not yield statistically significant relationships between these variables and GAD-7 scores ($p < 0.05$).

Exercise. Correlational designs demonstrated that the more of times participants engaged in physical exercise per week improved GAD-7 scores. The more often a participant engaged in physical exercise, the lower the GAD-7 score became. The results are consistent with current literature (Andrews, et al., 2018; Aylett, et al., 2018; Henriksson, et al., 2018; Lizarondo, & Magtoto, 2021; Stonerock, et al., 2015). Although each participant was free to choose their own routine and exercise style, participants reported a greater sense of well-being after completing an exercise. A systematic review determined that resistance exercise significantly improved GAD symptoms in patients (Stonerock, et al., 2015). Stonerock, et al.

(2015) examined 12 RCTs and 5 meta-analysis and determined that exercise offers benefits that are comparable to established treatments including CBT and pharmacotherapy. This is an important aspect of the project as clinicians will encounter patients who do not want to take medication every day. An alternative to pharmacotherapy such as exercise also has added benefits including improved overall physical health, reduced risk of cardiovascular disease, obesity, and type 2 diabetes mellitus (American Diabetes Association, 2022; Arnett, et al., 2019).

Digital Cognitive Behavioral Therapy. A Chi square test was used to compare GAD-7 scores and the use of dCBT weekly and demonstrated significant correlations between the two variables. This means that using the MyCompass© website at least once per week was associated with lower GAD-7 scores in the 13 participants. These findings were consistent with current literature (Andrews, et al., 2018; Firth, et al., 2017). Efficacy of dCBT has been demonstrated in RCTs for the treatment of GAD (Andrews, et al., 2018; Firth, et al., 2017). Evidence also supports its efficacy in the primary care setting with large effect sizes (Andrews, et al., 2018; Carpenter, et al., 2018; Mewton, et al., 2012). There is no current evidence directly comparing dCBT to face-to-face CBT. However, there are benefits to using dCBT compared to no psychological interventions in the primary care setting. Benefits of dCBT include cost-effectiveness, ability to access to home, and little to no side effects.

There are many forms of dCBT that can be offered. The benefit of using MyCompass© in the project was that the website was free to access compared to other efficacious dCBT applications. The website required that participants create their own username and password to allow for privacy during use. Furthermore, the website routinely screened the user during each use through the standardized GAD-7 screening tool. Screening regularly allowed the patient to see their improvement in symptoms over time and recommendations were given based on the severity of their symptoms. Participants who had less experience navigating websites on their cell phone, particularly older patients, may be less likely to benefit from dCBT. The amount of time and effort required to access and navigate the website may be too cumbersome. Those that

frequently used MyCompass© reported positive feedback such as ease of use, enjoyable modules, and that they could use it anytime and anywhere that had internet connection.

Pharmacotherapy. A Chi square test was also used to compare GAD-7 scores and pharmacotherapy use, which was statistically significant. This outcome demonstrates that pharmacotherapy was associated with decreased GAD-7 scores among the 13 participants. These findings are consistent with current literature (Andrews, et al., 2018; NICE, 2022; Slee, 2019; Slade, 2019). Current guidelines suggest that SSRI and SNRI antidepressants should be the first choice in medication to manage GAD symptoms (NICE, 2022). There is no RCT to suggest that one SSRI/SNRI is more effective than another, however systematic reviews and meta-analyses have compared various pharmacologic treatments. Slee (2019) conducted a systematic review and meta-analysis to determine efficacy and acceptability of various treatments and found that duloxetine (Cymbalta), venlafaxine (Effexor), and escitalopram (Lexapro) were more efficacious and had better acceptability than placebo when treating adults with GAD.

The medications prescribed for participants varied among providers at the clinical site. The most common medication used at the clinical site was fluoxetine (Prozac). Sertraline (Zoloft) and escitalopram (Lexapro) were also commonly prescribed at the clinical site. Other medications prescribed included duloxetine (Cymbalta), paroxetine (Paxil), venlafaxine (Effexor), vortioxetine (Trintellix), and vilazodone (Viibryd). Many of the participants recruited for this project were already taking medication to manage their GAD. Of the 13 participants that completed the eight-week intervention, 10 were already prescribed an SSRI or SNRI before beginning and two participants began taking medication at the beginning of the eight-week intervention. One participant declined to take medication but continued the non-pharmacologic interventions. There was no statistically significant difference among participants taking one medication over another. Best practice suggests that SSRIs or SNRIs should be the first-line medication choice for adults with GAD and the results from this project reinforced these

recommendations (NICE, 2022; Slee, 2019; Slade, 2019). Due to the small sample size, it is unclear if one medication had more effect on GAD-7 scores than others. A larger sample size could have contributed to examination of efficacy among the medications.

Strengths and Limitations of the DNP Project

Strengths

One of the greatest strengths of this project was having the opportunity to provide mental health services in a non-psychiatric setting. COVID-19 has exacerbated mental health issues in the United States. During the height of the COVID-19 pandemic, 40% of Americans reported having anxiety or depression (Weiner, 2022). Although this percentage has declined to 33% as of June 2022, this is still a significant increase compared to 11% of Americans reporting depression and anxiety symptoms prior to the pandemic (Weiner, 2022). As the demand for mental health services continues amidst a shortage of psychiatric providers, primary care providers should be informed about the latest interventions to treat GAD in the primary care setting. The project demonstrated that there are a variety of interventions that should be considered to manage GAD in the primary care setting. The interventions are cost-effective, easy to use, and evidence supports their safety.

Lifestyle modifications not only improve GAD symptoms, but they can promote overall well-being in adults. Proper dietary choices, increasing daily exercise, smoking cessation, and decreasing alcohol intake are all health-promoting behaviors. It is rewarding to know that implementation of this project had an impact on individual lives. The knowledge and leadership skills gleaned from this project will carry over into future practice as an advanced practice registered nurse.

Another strength of the project was that the project leader was able to meet with participants individually. Because the project leader conducted the GAD-7 screening, provided education, and followed-up with the participants, it ensured that each participant received the same education and overview of the project. Since the project leader had the opportunity to meet

with individuals face-to-face, it allowed the project leader to create a sense of trust between participants and the project leader. The project leader was also able to discuss how GAD had personally affected participants and get to know each individual. However, this can also be viewed as a limitation since it decreases the chance of sustainability once the project concluded.

Participants reported positive attitudes toward the intervention. They stated they found exercises that they enjoyed that made it easier to accomplish. Participants also reported positive feedback regarding MyCompass©. Participants liked that the dCBT could be accessed anywhere through their phone. Participants stated that the application was easy to navigate and that they enjoyed the different modules.

Limitations

The largest limitation to this project was the number of barriers to its implementation during the recruitment phase. Prior to implementation, there were many meetings with individual providers to discuss project implementation and how the project leader intended to recruit patients. Due to the providers' limited time, these meetings often felt rushed. The meetings and presentations created were meant to educate the providers on the latest EBP on GAD management and how the project leader intended to recruit patients. A script was created for providers to recruit potential participants when the project leader was unable to be at the clinical site. However, the providers collectively refused to recruit patients themselves. This put pressure on the project leader to be at the office multiple times per day to meet with patients coming to the office for GAD symptoms. Although GAD screening was implemented during annual physical exams, there was the potential to screen many more patients for GAD and potentially recruit them for the project had the providers adhered to the recruitment script created. Another limitation to the project was attrition. There were 23 initial participants and 13 that completed the eight-week intervention. Many patients who initially agreed to participate did not return phone calls or text messages during the 2-week follow-up. One participant stated did not want to participate in the two-week follow-up as she felt her symptoms were being managed with

medication and did not require additional interventions. It is unknown the reason for the other participants not continuing at the two-week follow-up.

Sustainability

The multimodal treatment plan would not be sustainable at the clinical site. The providers showed little interest in the project or the interventions. As the GAD-7 is already used to screen patients for GAD, this screening method will continue at the clinical location. Despite clinically significant results, this new practice will not be adopted. When discussing the interventions during various meetings, the providers often made statements that discussing lifestyle modifications and use of the dCBT website consumes too much of the providers' time. The clinical site is a fast-paced environment. Due to limited time, providers do not feel these interventions are a priority. Although the intervention cannot be adopted, the providers at the clinical site should consider providing patients with GAD educational brochures, such as those created by the project leader. This practice takes very little time to perform, and the patients can still receive education on various treatment options. The Royal College of Psychiatrists and NICE (2021) have created downloadable templates for providers (NICE, 2021; Andrews, et al., 2018).

The providers at the clinical site were adhering to best practice regarding pharmacotherapy prior to the project implementation. SSRIs were the mainstay of treatment for GAD at the clinical site and will continue to be following the conclusion of the project. One aspect that would have improved the project's overall success and sustainability would have been increased provider participation, especially during the recruitment process. Educational handouts that described the nature of the project and evidence-based interventions would have been useful to increase provider acceptance. Although this educational information is to educate patients, it is a quick and cost-effective resource for providers to use. Had providers been a part of the recruitment process, they would have become more familiar with the interventions. Overtime, discussing topics of lifestyle modifications and using MyCompass© with patients would feel more natural over time.

Providers at the clinical site refer severe cases of GAD that cannot be managed in the primary care setting to psychiatric services. The literature suggests that patients that do not respond to pharmacologic and psychologic interventions in the primary care should be referred to psychiatric services, especially those that are at risk for self-harm, self-neglect, or suicide (NICE, 2022).

Relevance for EBP Model

The Iowa Model Revised (2017) was used for planning, guiding, and implementing of the EBP project. The model was useful for guiding each step of the project. The model suggests that a spirit of inquiry should exist about a current practice. This was accomplished when the project leader noticed a significant number of patients coming to the clinical site for anxiety symptoms. The linear step process of the Iowa Model was essential for progression of the project and keeping the project leader on track. An example of this was identifying key stakeholders and creating a team. This was accomplished through a thorough review of literature and appraisal process. Recommendations by the Iowa Model (2017) for designing and implementing a pilot were effective. The purpose of piloting is to determine outcomes in a controlled environment with a homogenous group of patients to identify issues before the practice change is implemented on a larger scale by multiple caregivers in different settings (Melnyk & Fineout-Overholt, 2019). The pilot was successfully deployed at the clinical site and demonstrated statistically significant results.

The Iowa Model Revised (2017) gives streamlined recommendations to address sustainability. When a positive outcome is reached, key personnel should be engaged to sustain the practice change. The model suggests “hardwiring” the change into the fabric of the organization (Melnyk & Fineout-Overholt, 2019). The providers at the clinical site showed resistance to making the practice change. Step 5 of the Iowa Model guides the user through the pilot phase. This step is followed by a feedback loop that asks the user if the change is appropriate for adoption in practice. An important step of the Iowa Model (2017) is conducting a

thorough assessment of the clinical site to determine if the clinic views the problem as a priority. Had this step been performed more thoroughly by the project leader, a change in clinical site may have occurred. Although the providers at the clinic were open to the project, it became evident through the implementation that the project change was not the top priority for the providers. Although the change in practice was considered a priority at the clinical site during meetings with the providers, resistance to the practice change occurred once providers realized the time and effort required to implement the new practice. The attitudes and perspectives from the providers at the clinical site deemed this practice change not feasible for this location. When the practice change does not occur, the Iowa model encourages the user to consider alternatives. The Iowa Model (2017) redirects the user to “redesign” the pilot through a feedback loop to revisit step 6. This aspect of the model was useful to determine other ways to improve practice at the clinical location even if the multimodal treatment intervention cannot be sustained. If given the opportunity to redesign this project, the project leader would reassess time providers can invest and identify interventions that can be performed quickly, such as providing patients with an educational brochure rather than educating each individual during visits.

Although the practice change did not occur at the clinical site, the final step of the model regarding dissemination was successfully employed. An email was sent to the providers that included dissemination of the results. The providers were thanked for their time and encouraged to contact the project leader if they had any questions or wanted copies of the educational brochure. The project leader was invited to present a poster presentation at a nursing research conference in Des Moines, Iowa to promote the practice change to other healthcare professionals.

Overall, the Iowa Model Revised (2017) is an excellent tool to guide and implement an EBP project. Each step provides support and is integral to making a project successful. The model promotes questioning of the status quo and encourages the user to develop evidence-based change. The model is recommended for future projects because both bedside nurses and

APRNs can use this model to improve patient care. It has been used for more than 25 years to improve patient outcomes and is applicable to a wide range of nursing topics (Hanrahan, 2019). This model serves as a blueprint for APRNs to ask questions, implement practice changes, and improve patient outcomes in any clinical setting.

Recommendations for the Future

The EBP project demonstrates that implementing a multimodal intervention treatment plan for adults with GAD can improve GAD-7 scores in the primary care setting. The combination of lifestyle modifications, dCBT, and pharmacotherapy improved GAD-7 scores in participants over an eight-week period. Recommendations should focus on using a multi-intervention approach to managing GAD in the primary care setting. Because this approach is more time-consuming for providers, providers should consider longer appointments for these patients or more frequent follow up. Evidence suggests that patients diagnosed with GAD should have scheduled follow-up appointments every 2-4 weeks for the 3 months (NICE, 2022). By allowing more time with the patient, the providers can educate the patient on the importance of lifestyle modifications, including exercise as it has demonstrated to improve GAD symptoms in the literature (Andrews, et al., 2018; Aylett, et al., 2018; Henriksson, et al., 2018; Lizarondo, & Magtoto, 2021; Stonerock, et al., 2015). More frequent scheduling can also improve screening for GAD and determine if current interventions are effective in a timelier manner. However, compensation for provider time is a barrier to making this possible. Providers should consider using MyCompass© dCBT online application in their own practice. This project supported its use at the clinical location. It is essential that providers familiarize themselves with MyCompass© to effectively provide support and educate patients on its use.

Research

Future research is needed about management of GAD in the primary care setting. As a shortage of psychiatric providers currently exists, primary care providers will continue to encounter patients with anxiety symptoms in the clinical setting. Evidence-based treatment

approaches to managing GAD symptoms is essential. Future research should aim to determine the efficiency of dCBT applications. As the world becomes more digitalized, having evidence-based digital modalities is another tool for providers to use in combination with other interventions. Although CBT is recommended as a first-line treatment option for GAD, pharmacotherapy is more often chosen in the primary care setting due to time constraints and lack of education on its use. Research should be conducted to identify barriers to implementing psychological interventions in primary care and evaluate their effectiveness in comparison to pharmacological interventions.

Education

Education was integral to this project. During the recruitment phase of this EBP project, a significant amount of time was used to educate participants on proper diet, healthy lifestyle changes, and how to access and use MyCompass©. Participants were also educated on the nature of GAD and how pharmacotherapy works to improve GAD symptoms. It is essential that undergraduate and graduate nursing students understand how these factors all contribute to the holistic nature of GAD if they want to improve anxiety symptoms in their patients once they become providers. For students, nurses, and APRNs to facilitate change in patient behavior, students should have a strong foundation of a GAD diagnosis, how these interventions work, and be able to communicate it in a way that patients can understand. APRNs who are interested in implementing similar practice changes to improve patient outcomes should consider alternative ways to engage providers. One example could be providing the providers at the site with educational brochures that can be provided to their patients. This project demonstrates there are many ways to improve GAD symptoms. Although pharmacologic treatment may be necessary, non-pharmacologic interventions such as exercise and lifestyle changes can be used to offer a more holistic approach to patient care. This project supports the use of alternative strategies to manage GAD in primary care beyond pharmacotherapy. Students should be aware of the importance of preventive and management strategies to address the growing concern of mental

health disorders. All levels of nursing education should incorporate these strategies into their nursing curriculums.

Conclusion

As the COVID-19 pandemic comes to end, its effects on the mental health of Americans persists. GAD continues to be one of the most prevalent mental health disorders in the United States and the debilitating consequences that lead to impaired functioning, unemployment, marital conflict, and social isolation (Anxiety and Depression Association of America, 2022; Baxter, 2014). As the need for mental health care grows, it is necessary that primary care providers equip themselves with strategies to improve GAD symptoms in non-psychiatric settings. The project leader determined that improved practice was necessary to manage patients experiencing anxiety symptoms at the clinical site through observation as an FNP student. Identifying the need for improvement propelled the project leader to investigate evidence-based treatment practices to address GAD in the primary care setting. After a thorough review of literature and appraisal process, the project leader determined that a multimodal intervention treatment plan would be implemented over eight weeks.

The results from the project showed a combination of lifestyle modifications, dCBT, and pharmacotherapy had statistically significant results on GAD-7 scores after eight-weeks of implementation. The results showed that the interventions became statistically significant after four weeks and continued to decrease symptoms at the conclusion of the project. This project serves as a framework for implementing a holistic approach of non-pharmacologic and pharmacologic treatments to manage GAD symptoms in the primary care setting. The project also raises awareness on the difficulty and time involved for this practice change to occur in primary care as well as the difficulties of implementing alternative methods to address GAD in this setting. Alternative methods to educate patients on the importance of lifestyle modifications and the usefulness of dCBT, such as educational brochures are necessary for sustainability of this practice change. Research should aim to identify barriers to implementing psychological interventions and patient education to improve symptoms of GAD in the primary care setting.

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BIOGRAPHICAL MATERIAL

Morgan Cullings graduated in 2016 from Valparaiso University's (VU) accelerated Bachelor of Science in Nursing program. During her undergraduate years she had the opportunity to travel to Chiang Mai, Thailand to study the Thai healthcare system through VU's spring break program. After graduation, she continued living in Valparaiso, IN where she worked in a variety of nursing positions and specialties. Her work experience has been quite versatile, working first on an inpatient rehabilitation floor and as a home health case manager. In 2018, Ms. Cullings transitioned into the realm of critical care where she has worked in various intensive care unit (ICU) and emergency department (ED) settings. In 2019, she decided to further her education by pursuing her doctoral degree and is expected to graduate in May 2023. During her Doctor of Nursing Practice (DNP) program at VU, she began serving as a clinical nursing instructor for undergraduate VU students. Ms. Cullings is a member of the Coalition of Advanced Practice Nurses of Indiana, American Association of Critical Care Nurses, Graduate Nursing Student Academy, Midwest Nursing Research Society, and Society of Nurses in Advanced Practice. During her time as a graduate student, she was invited to work with the United Nations in Greenland focusing on mental healthcare access for native Greenlanders. Ms. Cullings was accepted as an Area Health Education Center (AHEC) Scholar where she volunteers with underserved communities in Northwest Indiana. She was recently inducted into the Sigma Theta Tau International Honor Society of Nursing as a nurse leader. She has participated in various forms of political advocacy for advanced practice registered nurses at the state capitol and is currently pursuing a certification as a sexual assault nurse examiner. In March of this year, she traveled to Des Moines, Iowa to present her EBP project poster at the 47th Midwest Nursing Research Society Conference. After graduation, Morgan plans to use her passion, experience, and education to care for underserved populations in Northwest Indiana.

ACRONYM LIST

ADAA: Anxiety and Depression Association of America

ANOVA: Analysis of variance

APRN: Advanced practice registered nurse

CASP: Critical Appraisal Skills Programme

CBT: Cognitive behavioral therapy

CDC: Center for Disease Control and Prevention

CINAHL: Cumulative Index to Nursing and Allied Health Literature

CPG: Clinical practice guideline

dCBT: Digital cognitive behavioral therapy

EBP: Evidence-based practice

EMR: Electronic medical record

ES: Evidence summary

GABA: Gamma-aminobutyric acid

GAD: Generalized anxiety disorder

GAD-7: Generalized anxiety disorder 7-item

IBM: International Business Machines Corporation

IRB: Institutional Review Board

JBI: Joanna Briggs Institute

MA: Meta-analysis

NICE: National Institute of Health and Care Excellence

QOL: Quality of life

RCT: Randomized controlled trial

SNRI: Selective norepinephrine reuptake inhibitor

SPSS: Statistics Package for Social Sciences

SR: Systematic Review

SSRI: Selective serotonin reuptake inhibitor

TRIP: Turning Research Into Practice

QOL: Quality of life

U.S: United States

APPENDIX A

Evidence Table

Citation (APA)	Purpose	Design/Sample	Interventions	Measurement/ Outcomes	Results/Findings	Level/ Quality
Andrews, et al (2018).	"To provide practical clinical guidance for the treatment of adults with panic disorder, social anxiety disorder and generalized anxiety disorder in Australia and New Zealand" (p. 1109).	Evidence-based and consensus-based recommendations were formulated synthesizing the evidence from efficacy studies, considering the effectiveness in routine practice, accessibility, and availability of treatment options in Australia and New Zealand, fidelity, acceptability to patients, safety, and costs.	Face-to-face CBT; digital CBT; SSRI; SNRI; pregabalin; benzodiazepines	Reduction in anxiety symptoms	Efficacy of CBT (both face-to-face and digital); efficacy of SSRI/SNRI. Efficacy of pregabalin; benzodiazepines were not recommended.	I
Andrews, Basu, & Cuijpers (2018).	A search for studies on effectiveness of iCBT in clinical practice was conducted.	Databases, reviews, and meta-analyses were searched for randomized controlled trials of cCBT or iCBT versus a control group (care as usual, waitlist, information control, psychological placebo, pill placebo, etc.) in people who met diagnostic criteria for major depression, panic disorder, social anxiety disorder or generalized anxiety disorder. Number randomized, superiority of treatment versus control (Hedges' g) on primary outcome measure, length of follow-up, follow up outcome, patient adherence and satisfaction/harm were extracted; risk of bias was assessed.	Internet-delivered CBT	Reduction of symptoms of GAD	The combined Hedges' g for Generalized Anxiety Disorder was 0.70 (CI 0.39–1.0). "Maintenance of improvement at follow-up was demonstrated with small, but significant, effect size superiority at both 3–6 and 9–18-month follow-up. The results are indicative of both short- and long-term benefit." (p. 76). "64 identified iCBT trials generated large effect size superiority over control groups, with maintenance of benefit at follow-up, acceptable patient adherence and high rates of satisfaction and now with evidence of effectiveness in routine practice." (p. 74).	I
Aylett, et al. (2018).	The purpose was "to assess the use of exercise versus waiting list control groups in the treatment of anxiety and also to assess the benefit of high intensity exercise vs low intensity exercise."	Systematic review of 15 randomized controlled trials.	High intensity and low intensity aerobic exercise	Reduction of anxiety symptoms in those with GAD or elevated GAD-7 score	Aerobic exercise was effective in the treatment of raised anxiety compared to waiting list control groups (effect size − 0.41, 95% CI = − 0.70 to − 0.12). High intensity exercise programs showed greater effects than low intensity programs. There was no significant difference in outcomes between groups of patients with diagnosed anxiety disorders and patients who had raised anxiety on a rating scale.	I

Carpenter, et al. (2018).	"The purpose of this study is to examine the efficacy of cognitive behavioral therapy (CBT) for anxiety-related disorders based on randomized placebo-controlled trials" (p. 502).	A literature search of 3,215 unique studies was conducted. Studies were excluded from the meta-analysis if they consisted of secondary analyses, placebos included active treatment ingredients for the target problem, if the CBT intervention was deemed "third wave," if sample included comorbidities, or if the intervention occurred remotely. The final analysis included 41 randomized studies examining CBT vs placebo.	CBT treatment (exposure, cognitive, or both; group vs. individual)	Reduction of anxiety symptoms for anxiety-related disorders	"Between-group effect sizes for continuous measures of target disorder symptoms from pre- to posttreatment were in the medium range (Hedges' g = 0.56, 95% CI = 0.44–0.69, P < .0001), indicating superior improvement in individuals randomized to CBT over placebo." (p. 506). "Results yielded significant but moderate effect sizes at posttreatment and follow-up for target disorder symptoms, and significantly greater odds of treatment response for CBT than placebo" (p. 508).	I
Firth, et al. (2017).	"To examine the efficacy of smartphone supported psychological interventions for reducing symptoms of anxiety. We also aimed to use sub-group analyses along with a systematic review of studies to explore which types of smartphone interventions were most efficacious, and in what context." (p. 16).	Systematic review of 8 RCTs focused on digital CBT for treatment of anxiety symptoms	Digital CBT through smartphone applications or websites	Reduction of anxiety symptoms. Three studies measured anxiety outcomes using the 'Generalized Anxiety Disorder 7-item' (GAD-7) scale, two using the anxiety subscale of the 'Depression Anxiety Stress Scales' (DASS), and one study for each of the Hospital Anxiety and Depression Scale (HADS), the 'State and Trait Anxiety Inventory' (STAI), the 'Beck Anxiety Inventory' (BAI), the 'Social Interaction Anxiety Scale (SIAS)' and the 'Liebowitz Social Anxiety Scale' (LSAS). (p. 17).	Significantly greater reductions in total anxiety scores were observed from smartphone interventions than control conditions (g=0.325, 95% C.I.=0.17–0.48, p < 0.01). Effect sizes from smartphone interventions were significantly greater when compared to waitlist/inactive controls (g=0.45, 95% C.I.=0.30–0.61, p < 0.01) than active control conditions (g=0.19, 95% C.I.=0.07–0.31, p=0.003)	I
Graham, et al. (2020).	To evaluate the efficacy of a mobile intervention platform, IntelliCare, for addressing depression and anxiety among primary care patients.	Two-arm randomized clinical trial at internal medicine clinics at the University of Arkansas for Medical Sciences. Adult primary care patients (N = 146) who screened positive for depression on the Patient Health Questionnaire-8 (PHQ; score 10) or anxiety on the Generalized Anxiety Disorder-7 (GAD-7; score 8) were recruited between July 17, 2018, and December 14, 2018.	The coach-supported platform composed of a suite of apps, was delivered over 8 weeks. Wait list control participants received treatment as usual for 8 weeks, then the mobile platform.	Primary outcomes were changes in depression (PHQ-9) and anxiety (GAD-7) during the intervention period. Secondary outcomes were differences in the proportion of patients who achieved recovery (PHQ-9/GAD-7 <5 or 50% improvement from baseline), sustainment of interventions effects during 2-month follow-up, and app use during intervention period.	One hundred forty-six patients were included (119 of 146 were women [81.5%]; mean [SD] age, 42.3 [13.8] years). Of the 146 patients, 122 (83.6%) were diagnosed as having depression and 131 (89.7%) were diagnosed as having anxiety. A greater proportion of intervention vs wait list control participants achieved recovery from depression (n = 38 of 64 [59%] vs n = 18 of 58 [31%]; odds ratio, 3.25; 95% CI, 1.54-6.86) and anxiety (n = 37 of 65 [57%] vs n = 25 of 66 [38%]; odds ratio, 2.17; 95% CI, 1.08-4.36). Sustained effects were observed for depression (slope, 0.01; 95% CI, –0.09 to 0.10; P = .92) and anxiety scores (slope, 0.02; 95% CI, –0.08 to 0.12; P = .67) during follow-up. App use was high, with a median of 93 and 98 sessions among participants with depression and anxiety, respectively.	II
Henriksson, et al. (2022).	To investigate whether a 12-week exercise intervention, with different intensities, could reduce anxiety	286 patients were recruited from primary care in Sweden. Severity of symptoms was self-assessed using the Beck	Participants were randomly assigned to one of two group exercise programs with cardiorespiratory and	Severity of symptoms was self-assessed using the Beck Anxiety Inventory (BAI) and the Montgomery Åsberg	Patients in both exercise groups showed larger improvements in both anxiety and depressive symptoms compared to the control group. In adjusted models the odds ratio for improved symptoms of anxiety after low-intensity training was	II

	symptoms in patients with anxiety disorders.	Anxiety Inventory (BAI) and the Montgomery Åsberg Depression Rating Scale (MADRS-S). Participants were randomly assigned to one of two group exercise programs with cardiorespiratory and resistance training and one control/standard treatment non-exercise group, with 1:1:1 allocation.	resistance training and one control/standard treatment non-exercise group, with 1:1:1 allocation.	Depression Rating Scale (MADRS-S)	3.62 (CI 1.34–9.76) and after moderate/high intensity 4.88 (CI 1.66–14.39).	
Lizarondo & Magtoto (2021).	To determine best available evidence regarding the effectiveness of exercise for GAD	6 pieces of high quality evidence were used for this evidence summary.	Resistance exercise, aerobic, nonaerobic exercise, treadmill training	Reduction of anxiety symptoms	Level 1 evidence from six pieces of high quality evidence suggesting exercise can be used to reduced anxiety symptoms in those with GAD.	I
Matthew, et al. (2021).	To determine the best available evidence regarding the effectiveness of smartphone-supported psychological interventions to manage anxiety.	4 pieces of high quality evidence were used for this evidence summary.	Use of smartphone to deliver internet-based CBT	Reduction of anxiety symptoms	Level 1 evidence from four pieces of high quality evidence suggesting that smartphone-delivered CBT can reduce anxiety symptoms.	I
NICE (2021).	Clinical practice guideline specifically aimed to cover the management of patients with GAD in the primary care setting. To support primary healthcare professionals to identify people with generalized anxiety disorder (GAD), treat generalized anxiety disorder effectively (restore health and function through relief of symptoms), minimize adverse effects of treatment, refer for specialized treatment, where necessary.	No design.	Lifestyle modifications, pharmacotherapy, CBT, referral to psychiatry	No outcome measures.	No results. The clinical practice guideline uses high quality evidence to guide clinicians to identify those with GAD, treat GAD effectively in primary care, and minimize adverse effects of treatment, and identify when to refer to specialized treatment.	I
Pamaiahgari (2020).	The goal of this evidence summary was to identify the best evidence regarding the effectiveness of cognitive behavioral therapy for patients with GAD.	8 pieces of high quality evidence were used for this evidence summary.	Cognitive behavioral therapy	Reduction of anxiety symptoms in those with GAD	Level 1 evidence from 8 pieces of high quality evidence suggesting that CBT reduces anxiety symptoms in those with GAD in the short term.	I

Parker, et al. (2021).	"…sought to investigate variables that may moderate psychological treatment effectiveness, namely treatment provider (specialist vs. non-specialist) and treatment modality (face-to-face CBT vs. online vs self-help" (p. 3).	Literature search initially identified 2,151 articles and 207 full-text articles were screened. 19 articles reporting 18 studies met all inclusion criteria.	Psychological treatments were predominantly CBT-based and provided on an individual basis.	"Anxiety-related difficulties"	"Psychological treatment, (predominantly CBT) are effective for reducing anxiety symptoms when provided in primary care" (p. 10).	I
Slee, et al. (2019).	"This study aims to make various comparisons between a range of pharmacological therapies and placebo in the treatment of adult patients with generalized anxiety disorder by use of available data from randomized control trials in a network meta-analysis" (p.769).	A literature search was conducted that identified 1,992 records, in which 505 potentially eligible studies were reviewed. After applying inclusion criteria, 89 studies were available for inclusion.	Pharmacological treatments vs placebo	All included studies used HAM-A changes	"Duloxetine, pregabalin, venlafaxine, and escitalopram were more efficacious and with better acceptability than placebo" (p. 772).	I
Slade (2021).	To determine the best available evidence regarding the effectiveness of pharmacotherapy for patients with GAD.	13 pieces of high level evidence were used for this evidence summary.	SSRIs, SNRIs, pregabalin, benzodiazepines, tricyclic antidepressants, combination of CBT and SSRI, propranolol	Reduction of anxiety symptoms using a variety of GAD measurement tools	SSRI/SNRI are effective in treating GAD; pregabalin has been shown to reduce symptoms; benzodiazepines should only be used to treat refractory symptoms; Insufficient evidence to support use of propranolol	I

APPENDIX B

Educational Brochure

What is generalized anxiety disorder?

It is normal to feel worried or anxious, especially during stressful times. However, when the worry or anxiety is happening often and cannot be controlled, it can interfere with day-to-day activities. For a diagnosis of GAD, the uncontrolled worry and anxiety symptoms must have occurred for more than six months.

Symptoms of GAD:

- Persistent worry or problems controlling worry about different things
- Feeling nervous, irritable or on edge
- A sense of doom or panic
- Increased heart rate
- Hyperventilation, or breathing quickly
- Sweating or trembling
- Feeling tired or weak
- Problems sleeping
- Trouble concentrating
- Gastrointestinal problems

Don't worry! Here are some things you can do to manage your worry and improve your symptoms.

Project Leader: Morgan Cullings RN, BSN

Valparaiso University

College of Nursing and Health Professions

Cell phone: (219) 386-6760

morgan.cullings@valpo.edu

You can contact me about questions and concerns by text or email.

Generalized Anxiety Disorder

Morgan Cullings RN, BSN
Valparaiso University

Help Strategies

Healthy Diet

It is important to maintain a well-balanced diet. Increase your intake of fruits and vegetables, especially fruits that are high in Vitamin C. Increase your intake of whole grain food.

Exercise

Research has shown that 30 minutes of exercise at least three times a week can decrease anxiety symptoms and improve your overall health. Find an activity that you enjoy and make it a habit. Common activities include walking, running, swimming, weightlifting, yoga, playing a sport, hiking, or biking.

Limit Alcohol and Caffeine

You should limit your alcohol and caffeine intake. Caffeine increases your heart rate and can increase anxiety symptoms. Decrease alcohol intake, as alcohol can worsen anxiety.

Stop Smoking

If you are smoking cigarettes or vaping, you should stop. It will benefit your overall health and decrease anxiety. The addictive chemical in tobacco products is nicotine. Nicotine is a stimulant and can make anxiety worse.

Sleep

Make a goal to get 7-9 hours of sleep per night. Improving your sleep habits will help with anxiety symptoms and improve your overall health. Go to sleep at the same time every night and try to wake up at the same time every morning. Sleep in a quiet, dark space. Limit screen time before going to bed.

Risk factors for GAD:

- Female
- Low educational level
- Low household income
- Unemployment or disabled status
- Family history of psychiatric disorder(s)
- Substance dependence
- Environmental stressors
- Childhood adversity

Cognitive Behavioral Therapy

Research shows that cognitive behavioral therapy, or CBT, is one of the best ways to help with patients with anxiety. You can do this will the MyCompass application that can be done through a smartphone, tablet, or computer that has internet access. This website will help you learn new ways of coping with your anxiety. You will need to create a username and password to begin.

You can find the CBT application at

www.mycompass.org.au

1. Click "Get Started" to begin.
2. Register an account with your email and password.
3. Take the self-assessment test. You can choose the depression screener, anxiety screener or both.

You can track your anxiety symptoms, including what you were doing and who you were with.

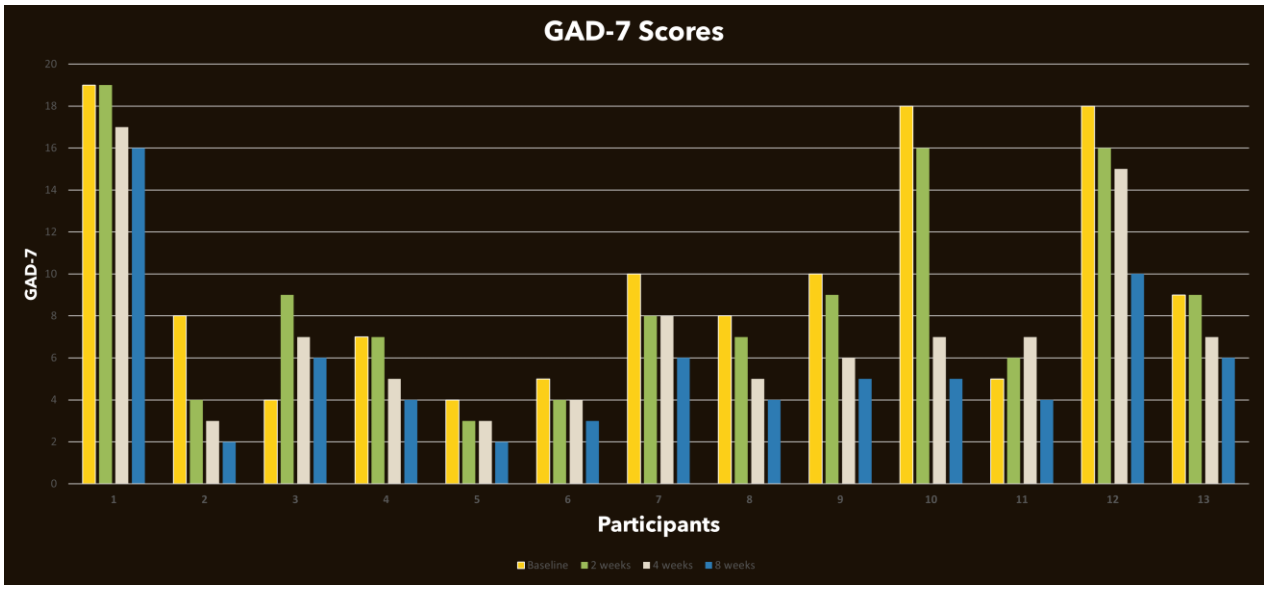
This program will teach you about anxiety, provides you with interactive activities to cope with anxiety symptoms, and will help you set goals.

Medication

Your doctor may prescribe an antidepressant medication to treat anxiety symptoms. Select serotonin reuptake inhibitors are the first line medication options for GAD. It is important to take this medication as prescribed and at the same time every day. It can take up to 6 weeks for the medication to take effect. Talk to you doctor if you have side effects or want to stop the medication. Do not abruptly stop these medications.

APPENDIX C

Individual Participant GAD-7 scores at baseline, 2 weeks, 4 weeks, and 8 weeks



APPENDIX D

Mean GAD-7 scores at baseline, 2 weeks, 4 weeks, and 8 weeks