The Effects of Mindfulness on Depression and Anxiety

Luis Fernando Fong

Arizona State University

Abstract

Depression and anxiety are common and debilitating illnesses that negatively impact personal well-being and functioning. The effects of depression and anxiety not only affect the individual, but also peers, family, the community, economy, and even the health care system. Pharmacological therapy is a first line treatment for depression and anxiety, but the risk for relapse remains. Cognitive behavioral therapy (CBT) and mindfulness-based cognitive therapy (MBCT) are treatments that have demonstrated effectiveness in treating depression. The evidence suggests that both therapies are successful in terms of reducing depressive symptoms, but most effective when combined. Further, evidence shows that the combination of MBCT and traditional pharmacological therapy provides relief from depressive symptoms and lengthens the amount of time between recurrent episodes and improves the quality of life. A project was implemented at an integrated health clinic to evaluate the effectiveness of a mindfulness-based intervention to reduce the symptoms of depression and anxiety. The results revealed that practicing mindfulness was statistically and clinically significant in reducing depression and anxiety. In addition, mindfulness scores increased over 30 day application of the intervention. The results demonstrated the value of utilizing mindfulness as a cost-effective therapy in addition to pharmacological treatment to decrease symptoms of depression and anxiety, as well as improve mindfulness. The ease of use demonstrated the value of mindfulness and self-directed skills aimed at improving wellness, reducing depression and anxiety which will result in the improvement of individual, economic, healthcare system, and community health.

Keywords: depression, mindfulness-based cognitive therapy, cognitive behavioral therapy, resilience, treatment, effectiveness, pharmacotherapy

The Effects of Mindfulness on Depression and Anxiety

Major depression is one of the most common mental illnesses characterized by persistent sadness, emptiness, decreased concentration, weight changes, sleep changes, or irritable mood, which can significantly impair the individual's ability to function. According to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association [APA], 2013), depressive disorders include disruptive mood dysregulation disorder, major depressive disorder, persistent depressive disorder, premenstrual dysphoric disorder, substance or medication induced depressive disorder as well as other depressive disorder due to a medical condition or unspecified. One of the primary treatments for depression consists of pharmacological therapy; however, other interventions can be applied in conjunction with medication to treat this debilitating illness. Cognitive behavioral therapy (CBT) is one of many interventions currently used to treat depression (APA, 2006). Anxiety is the most common mental illness characterized by excessive worry about a variety of events more days than not. Key symptoms include restlessness, irritability, and decreased sleep. Anxiety disorders can also interfere with relationships as well as work or school performance (NIMH, 2017). Treatments for depression consist of first line pharmacological treatment, but also can include different forms of therapies.

Problem Statement

According to the Centers for Disease Control and Prevention (CDC, 2016), the economic burden of depression was estimated to be $210.5 billion in 2010. Anxiety is associated with economic costs due to lost work productivity and high medical resource use. Depressive episodes are noted as a risk factor for suicide. Suicide is the fourth leading cause of death among adults age 18 to 65 years of age. Patients at risk for suicide include not only patients currently in crisis,

but also those who have an existing diagnosis of depression, bipolar disorder, schizophrenia, or substance abuse disorder (Norris & Clark, 2012). According to Healthy People 2020 (2014), 11.3 suicides per 100,000 people occurred in 2007. The target is a 10% reduction in suicide rates to 10.2 suicides per 100,000 people by 2020.

Another goal by Healthy People 2020 (2014) is to reduce the proportion of adults ages 18 years or older who experience a major depressive episode. In the United States, an estimated 6.5% of adults ages 18 years or older suffered a depressive episode. The goal is to reduce this by 10% in 2020, for a target of 5.8%. CBT is an important intervention that can reduce the occurrence of relapse in a depressive episode and work towards the health initiative to improve depression and suicide rates (Butler, Chapman, Forman, & Beck, 2006; Freeman & Freeman, 2005).

Background and Clinical Significance

Depression bears a direct ability to influence the daily quality of life. According to the National Institute of Mental Health (NIMH, 2017), 6.7%, roughly 16.2 million adults in the United States had at least one major depressive episode. NIMH also found that 19.1% of US adults had any anxiety disorder in the past year, with 2.7% of adults in the US diagnosed with generalized anxiety. Depression is associated with increased healthcare needs, absenteeism from school and work, as well as increased mortality. It is estimated that it will be the second-leading cause of disability worldwide by 2020 (Lutz, Schiefele, Wucherpfennig, Rubel, & Stulz 2016). Depression is significant for its comorbidity with smoking, alcohol consumption, sleep disturbances, heart disease, obesity, and physical inactivity, as well as other psychiatric conditions such as anxiety or substance abuse (APA, 2013). According to the CDC (2016), 1 out of 20 Americans age 12 years and older reported current depression. This is significant, because

if an episode of depression is not treated effectively, there is a 50% risk of recurrence of depression. The landmark study by the National Institute of Mental Health, Sequenced Treatment Alternatives to Relieve Depression, showed remission in only one third of major depression patients after first anti-depressant trial and lower response rates with each subsequent trial (Eisendrath et al., 2014). Evidence shows that medication is better than placebo in reducing the risk of relapse; however adherence to treatment continues to be a problem, and the effectiveness of medication decreases as number of previous episodes increases (Huijbers, Spinhoven, van Schaik, Nolen, & Speckens, 2016; Kuyken et al., 2015; Shallcross et al., 2015). Although anti-depressant therapy is considered a first-line treatment for depression, evidence shows interventions such as CBT and MBCT are effective methods for reducing depressive symptoms (Chiesa et al., 2012; Lenz, Hall, & Bailey Smith, 2016).

CBT is a therapy that focuses on understanding the link between thoughts, feelings, and behaviors. A goal of CBT is to identify and modify destructive or negative thinking patterns, assumptions about self, and the world. CBT is recognized as a first treatment of choice for patients who need to improve internal resources and coping skills (Wheeler, 2014). The CBT model can be associated with the Roy Adaptation Model (Freeman, 2005). The Roy Adaptation Model is applicable to a person diagnosed with depression precisely because it focuses on the interaction that nursing has to help the individual achieve optimal health by adapting in the areas of biological, psychological, emotional, and psychosocial, well-being (Freeman, 2005). CBT as an intervention is relevant to the Roy Adaptation Model because through taking care of the psychological and emotional aspects, improvement will be seen in psychosocial functioning and biological well-being.

Shinohara et al. (2013) completed a systematic review of multiple randomized controlled trials targeting treatment of acute depression in adults. The data suggested that participants responded better to cognitive behavioral based therapies than to other therapies with minimized risk. The study suggests that there is a reduction in risk to increasing depression by 7%. CBT was equally effective to anti-depressant treatment in adult depression (Butler et al., 2006; Meuldijk et al., 2016). The meta-analysis completed by Butler, Chapman, Forman and Beck (2006) also found that the relapse rate for depression when receiving CBT was 29.5% compared to 60% of individuals being treated with medication alone. Not only is CBT effective, but also has longer lasting periods before next recurrence or exacerbation of symptoms. Interestingly the effects of therapy versus medication were longer lasting for the therapy group at the 12 month period following any type of intervention (Butler et al., 2006; DeRubeis et al., 2005). The key to intervention and treatment for depression is that there is not only one intervention that works, but that rather a multi-faceted approach must be taken to help subside the symptoms of depression. Combination therapy of both cognitive therapy and antidepressants enhances the rate of recovery for depression (Hollon et al, 2015; Meuldijk et al., 2016).

A potential barrier to these interventions is that intervention is implemented over a course of several months and as a result, both the patient and economy suffer greater costs (Kuyken et al., 2015). There is an identified need to evaluate not only the effectiveness of CBT, but also to find methods to obtain the greatest impact for positive outcomes in a more rapid timeline. Concise versions of CBT with or without pharmacological interventions were as effective and may also yield quicker results (Lutz et al., 2016; Meuldijk et al., 2016).

CBT therapy has shown to be particularly efficacious in increased prolongation of recurrence of symptoms and has been the basis of further interventions (DeRubeis et al. 2005;

Lutz et al., 2016). MBCT is a group-based, 8 week, mind-body intervention integrating mindfulness meditation with concepts of CBT and was specifically developed as a relapse prevention intervention for depression (Eisendrath et al., 2015; Omidi, Mohammadkhani, Mohammadi, & Zargar, 2013). MBCT is designed to teach patients skills that allow them to become more aware of thoughts, feelings, bodily sensations, and how they relate to them. The goal is to incorporate those skills to modify automatic dysfunctional cognitive perceptions and thereby reduce risk of relapse and recurrence of depression (Chiesa, Mandelli, & Serretti, 2012). When compared to psychoeducation, MBCT was more effective at reducing depressive symptoms for those who did not achieve full remission with pharmacotherapy alone (Chiesa et al., 2012; Lenz, Hall, & Bailey Smith, 2016). MBCT was more effective and cost-effective than antidepressant treatment alone in mitigating depressive symptoms and undergoing relapse (Eisendrath et al., 2015; Kuyken et al., 2015; Omidi et al., 2013). Further, evidence shows that the combination of MBCT and traditional pharmacological therapy provides relief from depressive symptoms and lengthens the amount of time between recurrent episodes and improves the quality of life (Chiesa, Mandelli, & Serretti, 2012; Eisendrath et al., 2015; Kuyken et al., 2015; Lenz, Hall, & Bailey Smith, 2016; Meuldijk et al., 2016; Omidi, Mohammadkhani, Mohammadi, & Zargar, 2013).

The issue of preference for treatment arose as to whether treatment preference had any type of impact on effect. Huijbers, Spinhoven, van Schaik, Nolen, and Speckens (2016) further found that those with a preference for medication did equally well as those that had a preference for mindfulness. Further landmark studies have examined the use of MBCT as an augmentation treatment for depression showing statistically significant effect sizes of $d = 1$ (Eisendrath et al., 2015). These results indicate that mindfulness is effective as a treatment for depression.

Internal Evidence

The evidence collected highlights the significance and impact depression has on individual and community wellness. The vested stakeholders affected by this issue are primarily the patients seeking treatment for depression, healthcare practitioners, healthcare system, and the population as a whole. In the southwestern United States, an outpatient integrated health facility not only focuses on mental health treatment but also addresses physical well-being as part of an integrative care approach. Currently, patients diagnosed with depression or anxiety are not pursuing any additional non-pharmacological treatment to aid in treatment and relapse prevention of depression according to observation, patient self report, and current prescribers. Although groups are offered at the site, patients either do not wish to engage in groups or indicate an interest in receiving only medication at the time of appointment, at times citing time constraints as a barrier. Patients also report that sometimes they may be affected by their symptoms – a person suffering from depression may not have the energy or motivation to attend group or a person diagnosed with anxiety may not be comfortable in a group setting or be too preoccupied and restless to sit through a session. A psychiatric nurse practitioner supervisor has been identified as a champion of utilizing sustainable, non-pharmacological interventions to decrease the effects of depression and anxiety. Similarly, the site can receive additional state funding for good treatment outcomes. The community and population as a whole will benefit from patients with a reduction in depression.

The clinical significance of depression and anxiety led to the formulation of the clinically relevant PICOT question, “In adults diagnosed with depression and anxiety, how does a mindfulness-based intervention compared to usual care affect depression scores in a two month period?”

Search Strategy

The PICOT question guided the search for relevant sources and latest evidence-based practice. Multiple databases were searched including The Cochrane Library, Academic Search Premiere, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsychInfo, PsycArticles, and PubMed. The initial search in Cochrane Library yielded 9740 results (Appendix A) with a final yield of 52 when search narrowed to include English language only, results in the past five years, and focusing on the combination of key terms *depression, mindfulness, cognitive behavioral therapy*, *effectiveness* and *therapy*. Academic Search Premiere Database yielded 5804 results upon initial search (Appendix B) and yielded an end result of 19 with combination of key terms *depression, mindfulness, cognitive behavioral therapy, effectiveness, randomized control,* and *pharmacotherapy*. Initial search in CINAHL (Appendix C) yielded 3800 results with a final yield of five with combination of terms and inclusion of peer reviewed and English language studies only. The PsychInfo, PubMed, Psycharticles, ScienceDirect, JSTOR, and BioMed Central databases were searched utilizing the terms *depression, cognitive behavioral therapy, mindfulness, effectiveness, treatment, medication, pharmacotherapy*, and *randomized control trial*. The final yield in PsychInfo database yielded four significant results (Appendix D). The final yields included 46 results from PubMed (Appendix E), 53 from Psycharticles (Appendix F), 66 from ScienceDirect (Appendix G), 13 from JSTOR (Appendix H), and 131 from BioMed Central (Appendix I). Applying the process of rapid critical appraisal (Melnyk & Fineout-Overholt, 2015), 13 of the most clinically relevant articles were included in this review (Appendix J).

Critical Appraisal and Synthesis

The evidence found supporting the use of MBCT and CBT in treatment of depression was robust and included thirteen articles (Appendix K). All of articles with the exception of one sustained were high level evidence ranked on Level I or Level II hierarchy of evidence (Melnyk & Fineout-Overholt, 2015). The remaining article was a Level III hierarchy of evidence due to being a non-randomized controlled trial. Eleven of 13 studies were published within the last five years and peer reviewed with the exclusion of landmark systematic reviews (Appendix J).

The majority of the interventions occurred in outpatient psychiatric treatments. The population studies adults diagnosed with any of the subsets of major depression (Appendix J). Treatment groups were separated into receiving cognitive therapy with pharmacological treatment versus pharmacological treatment only or other therapy (Appendix K).

The average length of time for the intervention was eight weeks, with follow up in the form of measurement tools assessed for six months (Appendix K), although one study evaluated effects over 60 months (Shallcross et al., 2015).

The outcomes of interest most frequently examined included the severity of depression, recurrence rate, and relapse rate after treatment with intervention (Appendix K). Outcomes were measured utilizing valid and reliable instruments, predominantly the Beck Depression Inventory, and Hamilton Depression Rating Scale as well as Quality of Life measurements (Appendix J). The evidence suggested that utilization of MBCT or CBT resulted in improved depression rating scores and had a longer lasting effect in terms of preventing relapse of recurring episode of depression (Appendix K). The data does not conclusively suggest a more efficient therapy in terms of comparing cognitive therapy with antidepressant treatment; however, the data suggests that they are equally effective and beneficial when combined. Three high level studies indicated that quality of life is increased significantly with the application of mindfulness-based therapy

(Appendix K). The data supports the conclusion that there is no risk with the incorporation of cognitive therapy as an intervention.

Homogeneity across outcome measures is determined by utilizing standardized rating tools as well as establishing baseline diagnoses that are determined to be appropriate with research. Potential bias is identified in the Kuyken et al. (2015) study (Appendix J) related to the authors being co-directors of a mindfulness society.

Conclusions of Evidence

The utilization of MBCT as an intervention to treat adults diagnosed with depression demonstrated improvement in depression rating scores and improved wellness. A significant finding is that the combination of MBCT with already existing pharmacotherapy is a powerful combination that not only demonstrates improvement of symptoms but also extends the length of time between recurrent episodes. The skills obtained during the treatment phase can be learned and applied by the individual long after culmination of the intervention. A more important facet of this intervention is that there is no risk associated with its implementation. This intervention can show evidence to not only be cost-effective but also efficient in decreasing the effects of depression, anxiety, and improving general wellness outcomes. The effect of this intervention can be profoundly beneficial not only for the individual but also for the health of the population, economy, and healthcare system.

Purpose Statement

The purpose of this project was to evaluate the effectiveness of a mindfulness-based intervention to reduce the symptoms of depression and anxiety.

Contribution of Theory to Utility of Evidence

The evidence suggests that an intervention involving cognitive therapy can significantly improve health in relation to depression. The application of evidence can be best supported by adopting a conceptual framework. Pender's health promotion model (Appendix L) was selected as the framework which best describes the purpose of this project. The health promotion model is a middle-range theory that highlights the various dimensions of persons interacting with their interpersonal and cognitive environments in the search for improved health while integrating principles from expectancy value theory and social cognitive theory (Butts & Rich, 2015). This model focuses on the experiences and characteristics of the individual, behavior-specific cognitions, affect, and behavioral outcomes. One of the most important and applicable propositions of the model is that individuals can modify their cognitions to create incentives for health actions (Butts & Rich, 2015).

Evidence Based Practice Model

Application and implementation of a project into practice is strengthened not only by a strong conceptual framework but also by a model which can guide the application of the evidence into practice. The ACE Star Model (Appendix M) was created by the Academic Center for Evidence-Based Practice (ACE) at the University of Texas Health Science Center. This model focuses on knowledge transformation, which is defined as the conversion of research findings to create an impact on health outcomes through evidence-based action (Melnyk & Fineout-Overholt, 2015). The model highlights the use of the highest level of evidence and summarizing the information to form clinical guidelines while taking theory into account. Further guidelines are integrated with individual and organizational actions, which in this project include not only the nurse practitioner student but also champions at the clinical site. An important part of this model focuses on integrating patient preference into implementation as

well as continuous evaluation of health outcomes, economic outcomes, and policy (Melnyk & Fineout-Overholt, 2015).

In this project, the clinically burning question has led the search for evidence. The evidence has been searched systematically and only the best evidence has been selected utilizing rapid critical appraisal. The data findings have been summarized to arrive to conclusion, in this case, that MBCT is beneficial to improving health outcome for those diagnosed with depression. The translation into guideline is then crucial, especially as the information is disseminated to champions of the project taking the stakeholders preferences into consideration. Once the intervention is applied, it is important to be able to maintain an evaluation through appropriate measurement tools to be able to measure impact as well as to be able to modify implementation in order to improve sustainability and effects.

The evidence reveals that depression continues to be clinically significant issue affecting many people. The body of evidence suggests that current first line treatment of medication is useful; however, further therapies are important to help reduce incidence and prevent recurrence. MBCT has been shown to be efficient in ameliorating the effects of depression alone; however, the value in this intervention is its use in conjunction with first line treatment. The implementation of the evidence utilizing the ACE Star model and supported through Pender's Health Promotion Model will guide the project to be able to significantly impact the health outcomes of people suffering through depression and anxiety while improving population health and reducing healthcare cost.

Application of Evidence to Practice

The evidence suggests MBCT is a powerful adjunct to traditional pharmacological therapy in the treatment of depression. Implementation of mindfulness can have beneficial

effects on improved quality of life and reduction of depressive symptoms. A pilot program was implemented at an outpatient integrated health clinic in southwestern Arizona over a three month period. The key stakeholders include the patients, nurse practitioners, physician assistant, and clinic. Information on most current evidence was presented at quarterly provider meetings to disseminate the importance of depression, anxiety, and an effective intervention that may be sustainable and cost-effective while improving patient outcomes. A champion of change was identified and relied on to help support innovation and became a liaison to the application of new knowledge to impact the clinical practice.

Project Methods

Participants

Adults diagnosed with depression and anxiety at an integrated health outpatient clinic in the Southwestern United States were invited to participate in a self-directed mindfulness intervention spanning 60 days. The proposed timeline of the project was modified to improve participation. Inclusion criteria for participation included being English speaking and having access to the internet. Participants excluded were those experiencing psychosis or having co-occurring substance abuse. Participation was voluntary and participants were allowed to withdraw at any time without consequence. Participants signed consents compliant with clinical site HIPAA policy and procedure as agreed upon through the clinical site Consent For Evaluation and/or Treatment and to Use & Disclose Health Information document. Participants were informed that the data collected would be accessed by the primary researcher, ASU faculty mentor, and any results obtained from data may be presented during presentations at conferences or publications in journal articles**.** No personal identifying information was released; confidentiality was ensured by assigning each participant an individualized anonymous identifier. The project protocol was

submitted and approved by the Arizona State University Institutional Review Board to ensure protection.

Procedure

Once the participants were identified, the primary researcher had an initial meeting with the participant to explain mindfulness, the purpose of the study, obtain consents, and provide written and electronic resources to aid in completion of the study. The primary research collected self-reported questionnaires to obtain baseline scores of depression, anxiety, and mindfulness. Participants were informed of another set of scores to be taken at 30 days and 60 days after intervention. A workbook explaining mindfulness was provided to the participants along with a self-tracking log. The intervention consisted of listening to a 5-8 minute audio clips of mindfulness meditation focusing on guided exercises such as deep breathing, mindful eating, and body scan. The instructional audio clips were led by two mindfulness instructors through an educational website – http://www.wild5meditations.com. The instructions for the intervention consisted of listening and participating in one mindfulness meditation daily.

Measures

The outcomes of interest for this project include depression, anxiety, and measurement of effectiveness of mindfulness. The measurement tool used to measure depression was the Patient Health Questionnaire-9 (PHQ-9) (Appendix N). The PHQ-9 is a nine question depression module taken from the full Patient Health Questionnaire. The PHQ-9 can be used to measure the severity of depression as well as monitor symptom changes or the effect of treatment over time. The PHQ-9 scores per question are from zero to three; with the overall total score ranging from 0 to 27. Depression severity can be identified as minimal or none, mild, moderate, moderate-severe, and severe depression depending on the respective ranges, 0-4, 5-9, 10-14, 15-19, and

greater than 20. Interestingly, higher PHQ-9 scores are correlated with decreased functional status and increased symptom-related difficulties such as increased healthcare utilization and sick days. The PHQ-9 has a sensitivity of 88% and specificity of 88% in detecting major depressive disorder in scores greater than 10 (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is a reliable and valid measurement of depression severity. The validity and reliability of the construct, coupled with brevity and ease of use make this an ideal tool to use in this project.

The measurement tool selected to measure anxiety was the Generalized Anxiety Disorder 7-item scale (GAD-7) (Appendix O). The GAD-7 is a 7 item self-report scale developed to assess symptoms of anxiety. It is a Likert-type scale similar to PHQ-9 – scoring by 0-3 over symptoms experienced in past 2 weeks. Designated cut off points for levels of anxiety are 0-4 for minimal, 5-9 for mild, 10-14 for moderate, and 15-21 for severe. Increasing scores are correlated with functional impairment. The GAD-7 has a sensitivity of 89% and specificity of 82% for detecting anxiety (Spitzer, Kroenke, Williams, & Lowe, 2006). In mood disorders, the GAD-7 has been found to have a sensitivity of 79.5% and specificity of 44.7% in mood disorders (Rutter & Brown, 2017).

The measurement tool selected to measure mindfulness was the Mindfulness Attention Awareness Scale (MAAS) (Appendix P). This is a 15 item survey focusing on present-centered attention-awareness in everyday experience. Different studies suggest a Cronbach's alpha of 0.78 to 0.92 and test-retest reliability of 0.81 (Park, Reilly-Spong, & Gross, 2013). This measurement completed prior to intervention, one month into intervention, and at conclusion of intervention can indicate how proficient the patients were at developing the mindfulness skill. The construct validity shows positive correlations with well-being, positive affect, and openness, while being negatively correlated with anxiety, stress, and rumination.

The measurement tools for outcomes are strongly connected with the theoretical underpinning described by Pender's Health Promotion Model. These measurement tools can not only measure current state of well-being or depression, but also can measure increased awareness of state of well-being, cognition, and can demonstrate their commitment to change through lower PHQ-9 and GAD-7 scores and higher MAAS scores.

Data analysis was completed using SPSS v. 23. Descriptive statistics were used to describe the sample and outcome variables. Mean scores before and after intervention were compared utilizing *Paired Sample t Test.*

The proposed budget for this project was only the cost of printing educational booklet and tracking sheets – which was 10 sheets per participant.

Project Results

Descriptive statistics were used to describe the sample and outcome variables (Appendix Q). The sample size at the beginning of the study was 35. The number of participants who completed the 30 day baseline scores was only 17. The number of participants completing the intended 60 days was only 3. There was an 82% attrition rate. Due to this attrition rate, the primary endpoint of the study was changed to the 30 day mark post intervention. The final sample (n = 17) consisted of all females. A combined age range of 76.8% was between 18 and 34 years old. Of this group 35.3% were 18-24 and 41.2% were in the 25 to 34 year old range. The ethnicity was 41.2% White, 41.2% Hispanic, and 11.8% Black. The education level varied, but the most frequent occurrence was some college, obtained by 9 out of 17 participants or 52.9%.

The paired-samples t test was used to compare the mean baseline scores of the PHQ-9, GAD-7, and MAAS to the mean scores 30 days after the intervention (Appendix R). The mean on the PHQ-9 at baseline was 16.7 (sd = 4.73), and the mean at 30 days was 12.9 (sd = 4.96),

95% CI [1.17, 6.48]. A significant increase from baseline to the 30 day period was found ($t(16) = 3.054$, $p = .008$). This improved scores by an average of approximately 4 points. The mean on the GAD-7 at baseline was 16.9 ($sd = 2.63$), and the mean at 30 days was 11.4 ($sd = 4.50$), 95% CI [2.94, 8.11]. A significant increase from baseline to the 30 day period was found ($t(16) = 4.536$, $p < .001$). This decreased anxiety scores by an average of approximately 5 points. The mean score of the MAAS at baseline was 40.1 ($sd = 10.64$), and the mean at 30 days was 48.4.4 ($sd = 11.33$), 95% CI [-11.03, -5.56]. There is strong evidence ($t(16) = - 6.437$), $p < .001$) that the mindfulness intervention improves mindfulness.

The pre-post effect size for the PHQ-9 was $d = 0.74$ signifying a medium effect. The effect size for the GAD-7 was $d = 1.10$, while the effect size for MAAS was $d = 1.56$, both signifying large effect. Refer to Figure 1 and Figure 2 to see graphical results of the improvement in scores.

Impact of Project

The results are positive for statistical and clinical significance in reducing depression and anxiety in adults diagnosed with depression and/or anxiety. The mindfulness intervention was statistically significant in decreasing mean scores of depression and anxiety respectively. Clinically, the difference in depression and anxiety mean scores is sufficient to signify a decrease from moderate-severe to moderate levels of depression and anxiety. The mindfulness intervention further demonstrated that mindfulness increased with practice.

Discussion

The aim of this project was to evaluate the effectiveness of a self-directed daily mindfulness intervention on depression and anxiety. The results were relevant in decreasing both depression and anxiety. This is important as it provides evidence that a quick, self-directed

mindfulness intervention is beneficial as an adjunct to traditional pharmacological treatment. The results resemble the research indicating that mindfulness-based interventions are effective in decreasing depression and anxiety.

The data showed that the mindfulness score increased with practice. This can lead to the conclusion that mindfulness is a skill that can be learned. The use of this skill can be further beneficial as, in theory, the person exposed to the mindfulness intervention can demonstrate increased proficiency and share this intervention with family or friends suffering from depression or anxiety. The fact that this intervention was cost-effective improves the ability to be shared and practiced. This can result in improved outcomes not only for the individual, but also for the community. The intervention provided a sense of empowerment, where the individual was active in their recovery in addition to the passive action of receiving medication. The information can be generalized to state that the improvement of depression and anxiety can also result in decreased utilization of the healthcare system. Empowering the population to improve their wellness can result in better health outcomes for the individual and population, as well as benefit the economic burden of these diseases.

The sustainability of this intervention is very feasible. As discussed, this intervention was cost-effective, costing only the sheets of paper to be distributed to participants. This intervention implemented the use of technology and innovation, which are supported by the host organization. Some patients reported that the technology piece added mobility and increased access to interventions helpful toward their health. There were even some who stated that the intervention was used not only once daily according to project protocol, but on an as needed basis, particularly to dissuade anxious feelings or negative thinking. Another contributing factor favoring sustainability is the relatively quick use of measurement tools such as the PHQ-9,

GAD-7, and MAAS. These tools can be easily implemented without taking much time out of a psychiatric assessment and can be supported by evidence-based practice to utilize measurable tools in providing effective healthcare. Healthcare payment and insurance requirements can also be satisfied by providing measurable outcomes which can point toward improved quality of care. As our healthcare system moves toward value-based payment, this can not only improve quality of individual patient experience and health, but also result in an overall decrease in cost. Particularly as our healthcare system focuses on prevention, the use of this intervention can shift the focus towards working on improving wellness as opposed to treatment of symptoms.

The strengths of this project included strong support from the clinical site and champions of change. The intervention was simple, implementable, and cost effective. The ability to provide an evidence-based intervention that is cost-efficient and shown to provide positive outcomes to leadership positions in the healthcare group can ensure appropriate support and implementation as an intervention. The intervention was an adjunct to pharmacotherapy resulting in little to no risk of potentially dangerous outcomes.

There are several limitations to the project. The most glaring limitation is the relatively small sample size. There was a high attrition rate, 82%, necessitating the movement of the primary endpoint from 60 days to 30 days. The attrition rate in most cases was due to a closure of services, meaning the patient did not follow up with the clinic or cancelled services. There were some who felt the audio clips were not what they expected. Conversely, there were some participants who withdrew due to feeling better and focusing on other activities and thus not practicing mindfulness. A significant limitation to data collection was the lack of adherence to a tracking log. The self-reporting log was unreliable. Many patients did not mark the days the intervention was completed and as such could only give an estimate of the amount of days that

the intervention was actually performed. A significant limitation is the lack of control group to directly assign improvement to the intervention. All participants were also being prescribed medications at the time of project. It is difficult to say with certainty that the improvement in depression and anxiety were solely the result of the mindfulness intervention. There was similarly insufficient information or screening for participants who may have been naïve to therapy or had past experience with mindfulness. Lastly, the information cannot be generalized to other populations. The sample consisted of adults with an established diagnosis of depression and anxiety, and as such applicability to the general population would not apply.

Conclusion

The results demonstrated the value of utilizing mindfulness as a cost-effective therapy in addition to or potentially separate from pharmacological treatment to decrease symptoms of depression and anxiety, as well as improve mindfulness. The ease of use demonstrated the value of mindfulness and self-directed skills aimed at improving wellness, reducing depression and anxiety which will result in the improvement of individual, economic, healthcare system, and community health. Further study research is warranted to investigate the use of mindfulness for other mental health disorders or populations. An important area of interest would also include following the participants for a longer period of time to establish rates of relapse and the time between each episode. In conclusion, the mindfulness intervention was effective and provides an additional tool that can be used to improve mental health outcomes and quality of life.

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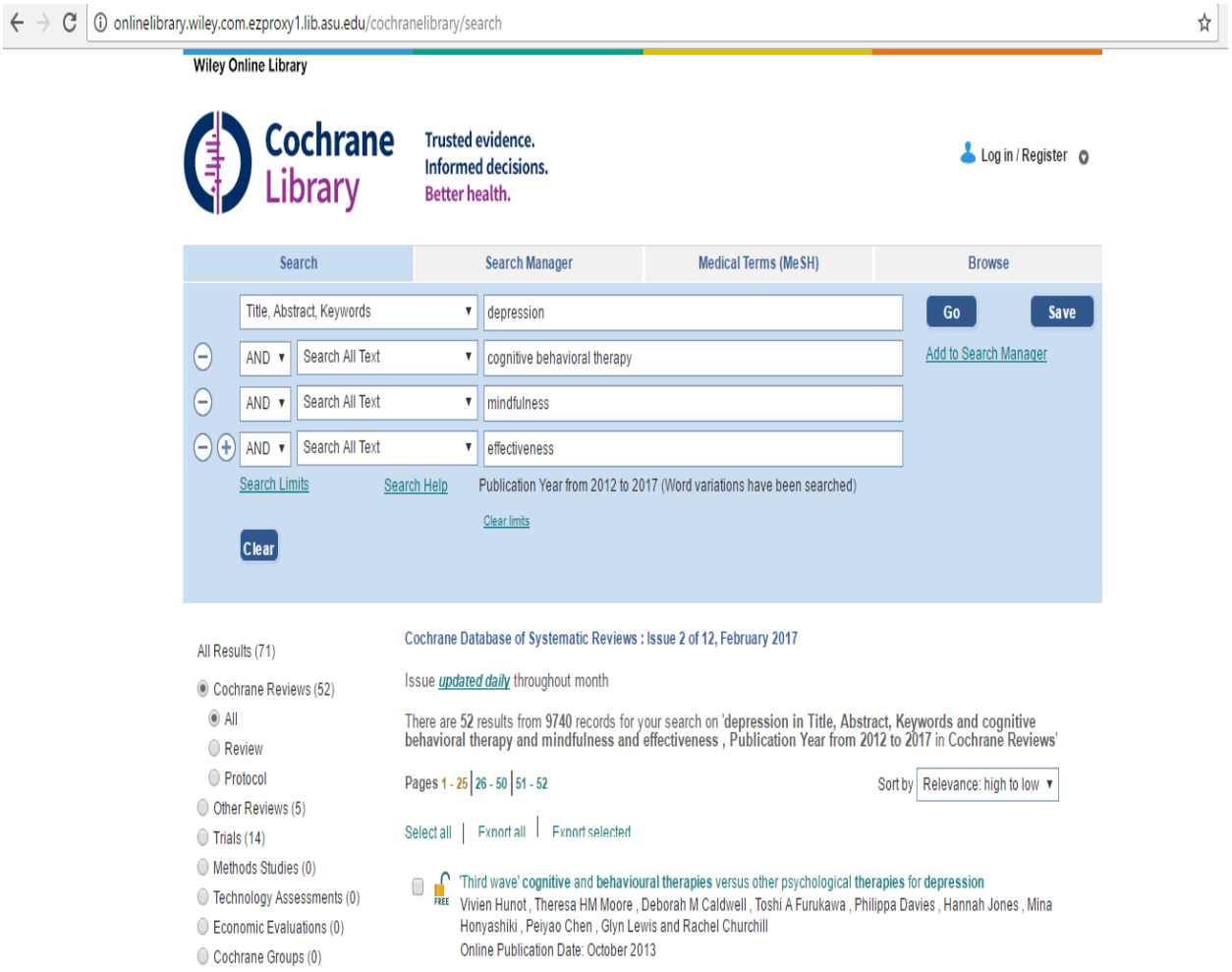
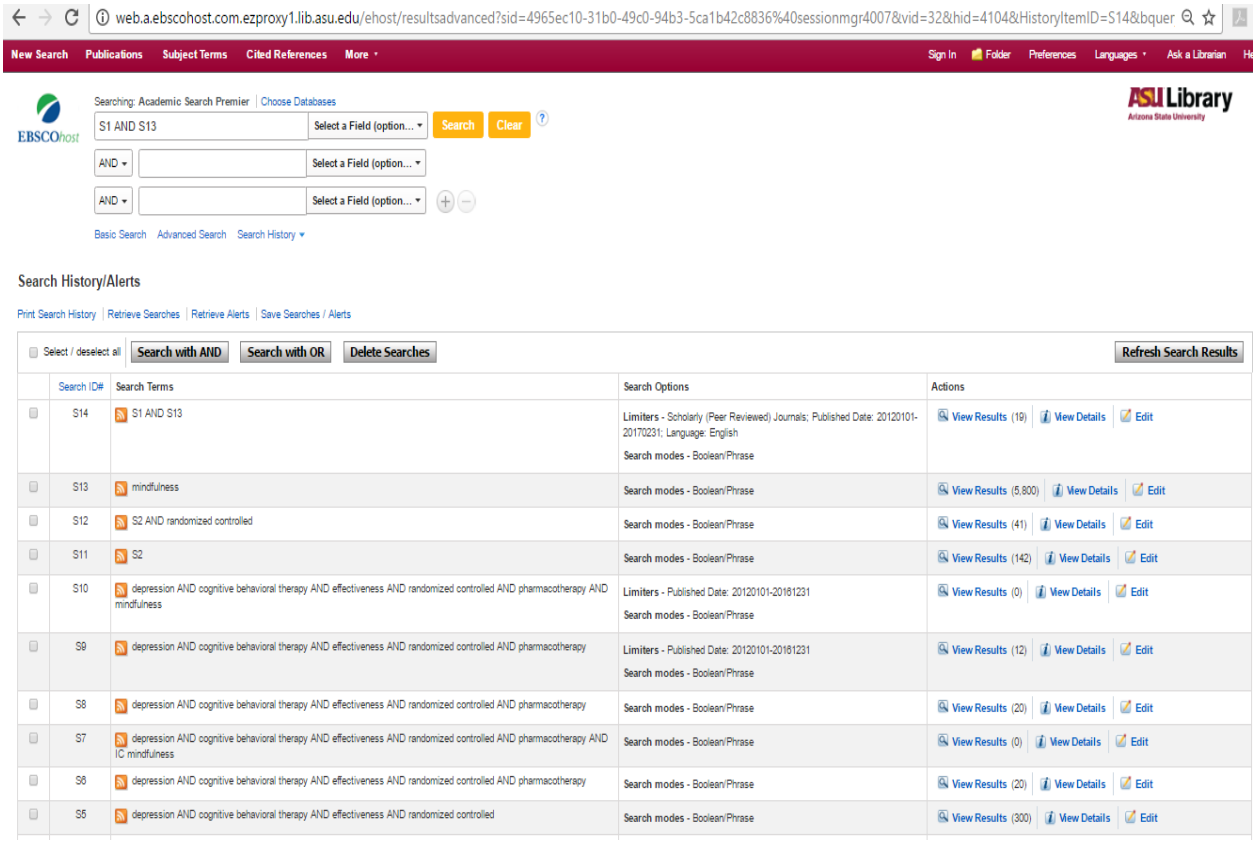
Appendix A

Cochrane Library Search Strategy



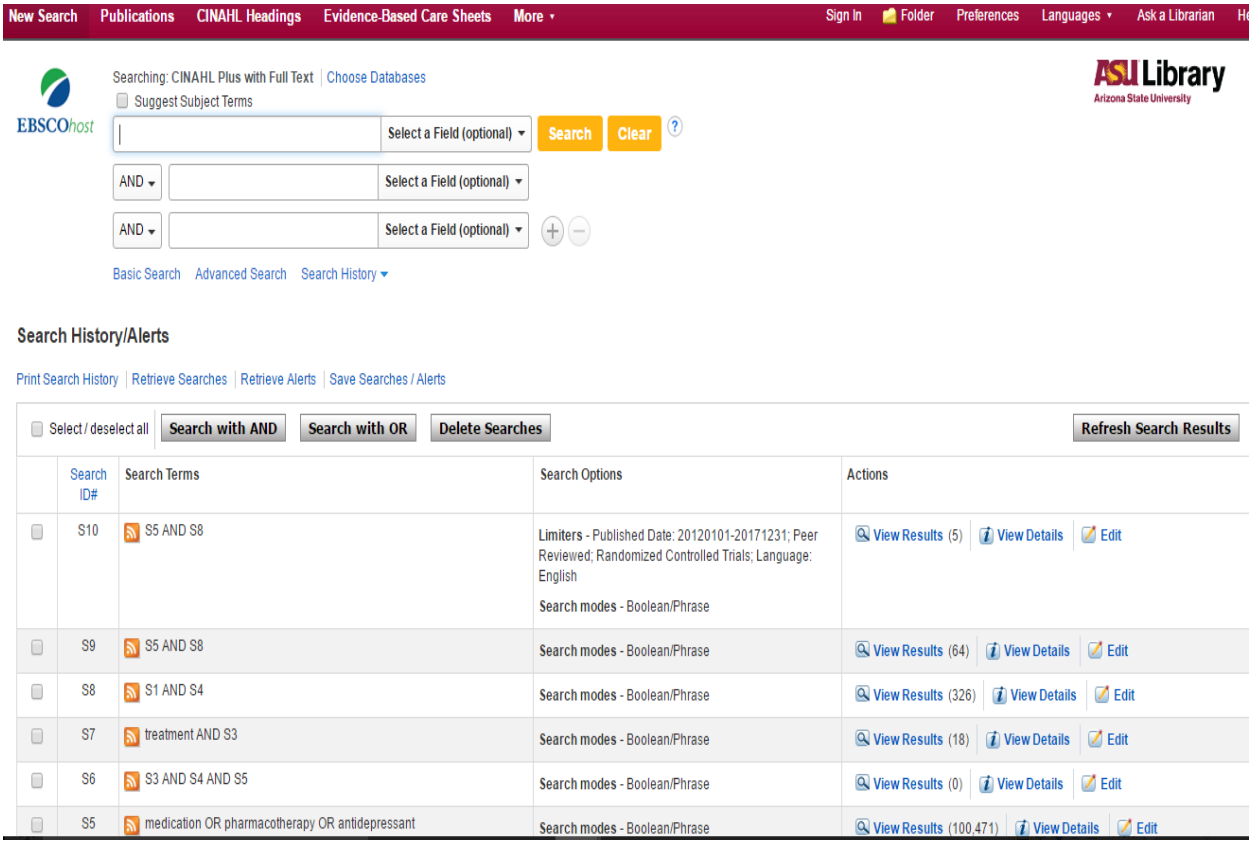
Appendix B

Academic Search Premiere Search Strategy



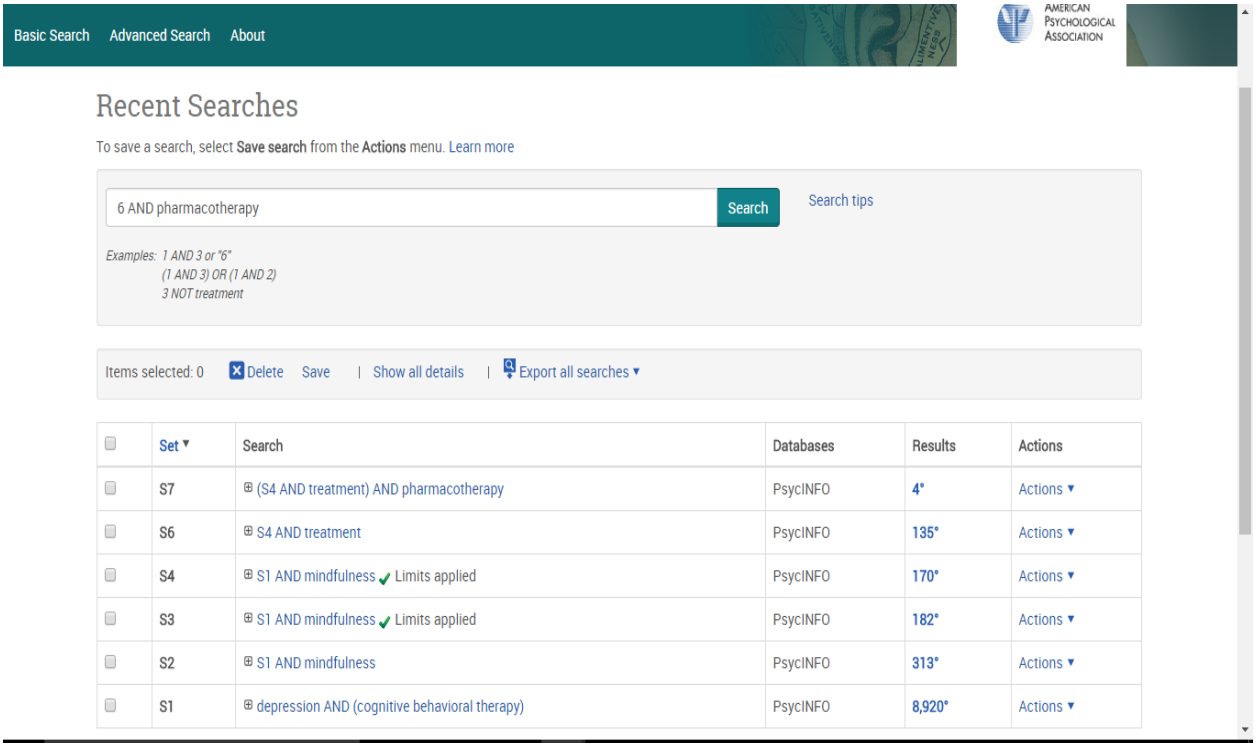
Appendix C

CINAHL Search Strategy



Appendix D

PsychInfo Search Strategy



Basic Search Advanced Search About

AMERICAN PSYCHOLOGICAL ASSOCIATION

Recent Searches

To save a search, select **Save search** from the **Actions** menu. Learn more

6 AND pharmacotherapy Search Search tips

Examples: 1 AND 3 or "6"
(1 AND 3) OR (1 AND 2)
3 NOT treatment

Items selected: 0 Delete Save | Show all details | Export all searches

	Set	Search	Databases	Results	Actions
☐	S7	⊞ (S4 AND treatment) AND pharmacotherapy	PsycINFO	4*	Actions
☐	S6	⊞ S4 AND treatment	PsycINFO	135*	Actions
☐	S4	⊞ S1 AND mindfulness ✓ Limits applied	PsycINFO	170*	Actions
☐	S3	⊞ S1 AND mindfulness ✓ Limits applied	PsycINFO	182*	Actions
☐	S2	⊞ S1 AND mindfulness	PsycINFO	313*	Actions
☐	S1	⊞ depression AND (cognitive behavioral therapy)	PsycINFO	8,920*	Actions

Appendix E

PubMed Search Strategy

Filters activated: Clinical Trial, published in the last 5 years, English. Clear all

Use the builder below to create your search

Edit Clear

Builder

All Fields Show index list

AND All Fields Show index list

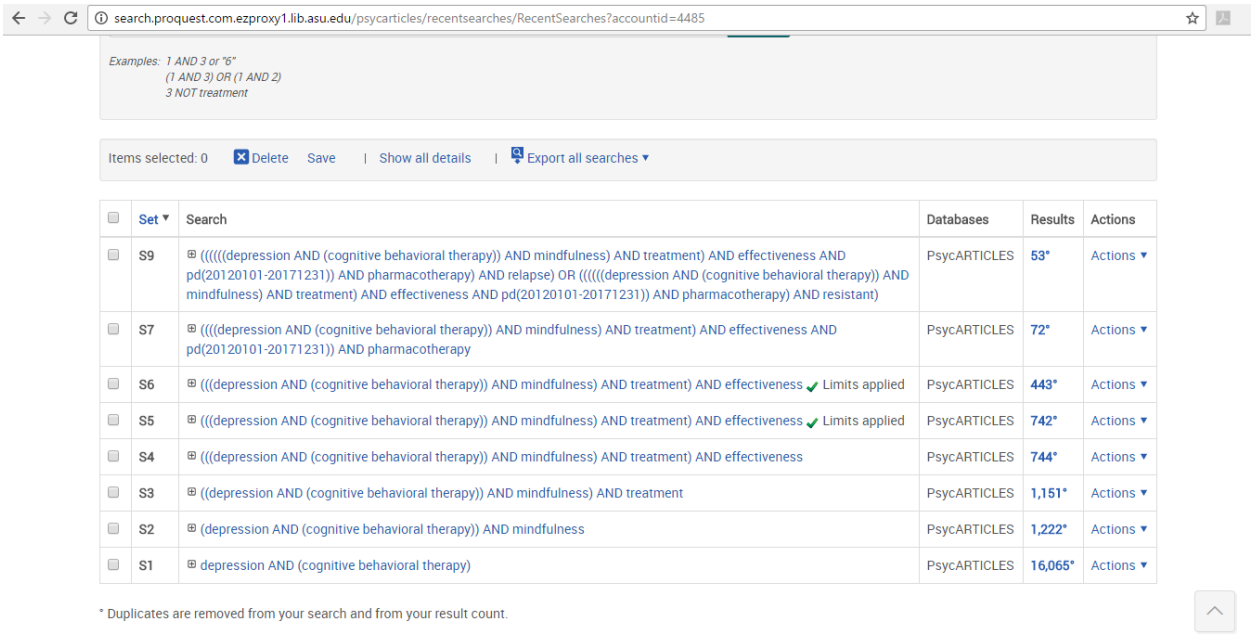
Search or Add to history

History Download history Clear history

Search	Add to builder	Query	Items found	Time
#12	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectiveness Filters: Clinical Trial; published in the last 5 years; English	46	18:47:40
#11	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectivness Filters: Clinical Trial; published in the last 5 years; English	0	18:47:40
#10	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectiveness Filters: Clinical Trial; published in the last 5 years	46	18:46:38
#9	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectivness Filters: Clinical Trial; published in the last 5 years	0	18:46:38
#6	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectiveness Filters: published in the last 5 years	115	18:46:37
#5	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectivness Filters: published in the last 5 years	0	18:46:37
#8	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectiveness Filters: Review; published in the last 5 years	20	18:45:55
#7	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectivness Filters: Review; published in the last 5 years	0	18:45:54
#4	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectiveness	142	18:44:57
#3	Add	Search (((((depression) AND cognitive behavioral therapy)) AND mindfulness)) AND effectivness	0	18:44:57
#2	Add	Search (((depression) AND cognitive behavioral therapy)) AND mindfulness	646	18:42:59
#1	Add	Search (depression) AND cognitive behavioral therapy	15336	18:42:20

Appendix F

PsycArticles



search.proquest.com.ezproxy1.lib.asu.edu/psycarticles/recentsearches/RecentSearches?accountid=4485

Examples: 1 AND 3 or "6"
(1 AND 3) OR (1 AND 2)
3 NOT treatment

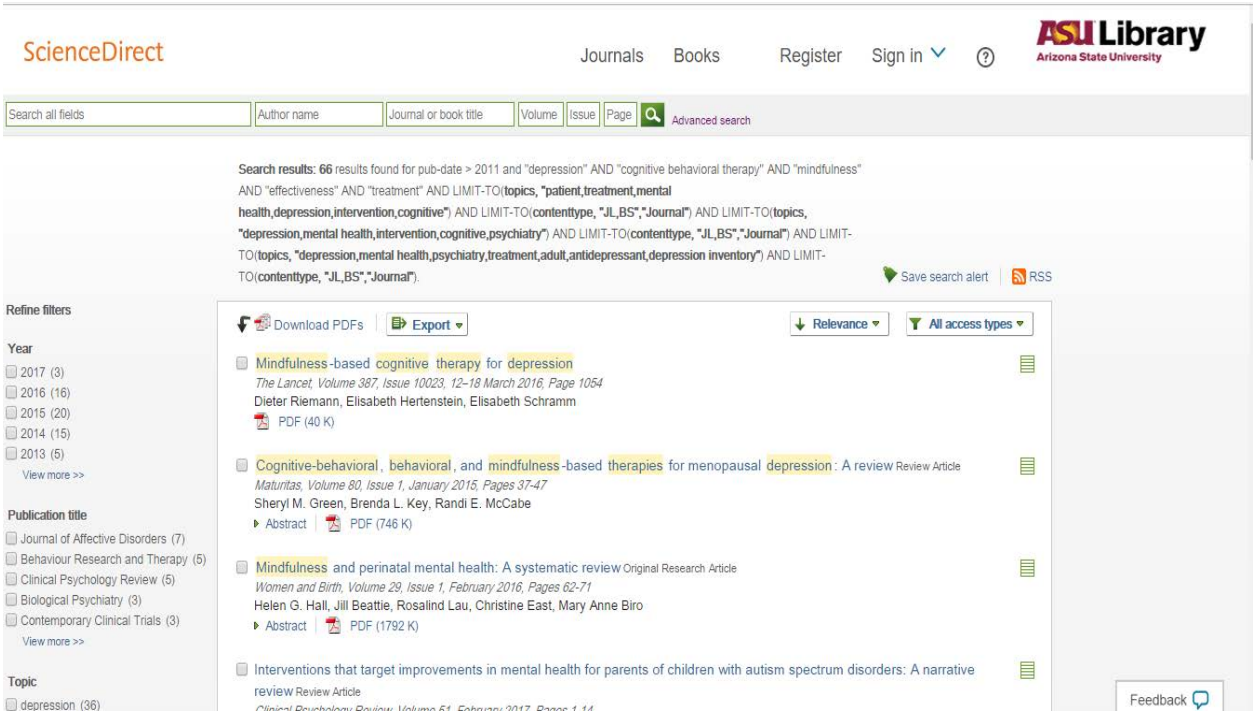
Items selected: 0 | Delete | Save | Show all details | Export all searches

Set	Search	Databases	Results	Actions
S9	((((((depression AND (cognitive behavioral therapy)) AND mindfulness) AND treatment) AND effectiveness AND pd(20120101-20171231)) AND pharmacotherapy) AND relapse) OR ((((((depression AND (cognitive behavioral therapy)) AND mindfulness) AND treatment) AND effectiveness AND pd(20120101-20171231)) AND pharmacotherapy) AND resistant)	PsycARTICLES	53*	Actions
S7	((((depression AND (cognitive behavioral therapy)) AND mindfulness) AND treatment) AND effectiveness AND pd(20120101-20171231)) AND pharmacotherapy	PsycARTICLES	72*	Actions
S6	(((depression AND (cognitive behavioral therapy)) AND mindfulness) AND treatment) AND effectiveness ✓ Limits applied	PsycARTICLES	443*	Actions
S5	(((depression AND (cognitive behavioral therapy)) AND mindfulness) AND treatment) AND effectiveness ✓ Limits applied	PsycARTICLES	742*	Actions
S4	(((depression AND (cognitive behavioral therapy)) AND mindfulness) AND treatment) AND effectiveness	PsycARTICLES	744*	Actions
S3	((depression AND (cognitive behavioral therapy)) AND mindfulness) AND treatment	PsycARTICLES	1,151*	Actions
S2	(depression AND (cognitive behavioral therapy)) AND mindfulness	PsycARTICLES	1,222*	Actions
S1	depression AND (cognitive behavioral therapy)	PsycARTICLES	16,065*	Actions

* Duplicates are removed from your search and from your result count.

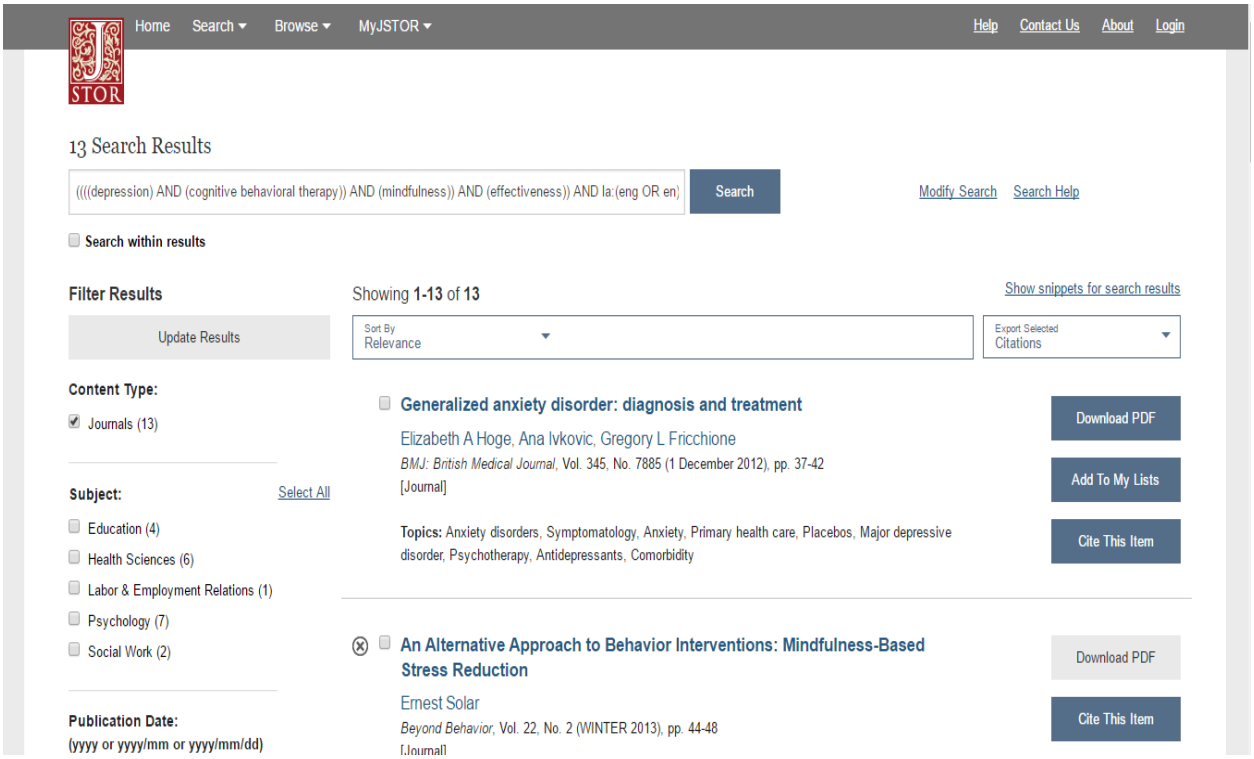
Appendix G

Search Strategy ScienceDirect



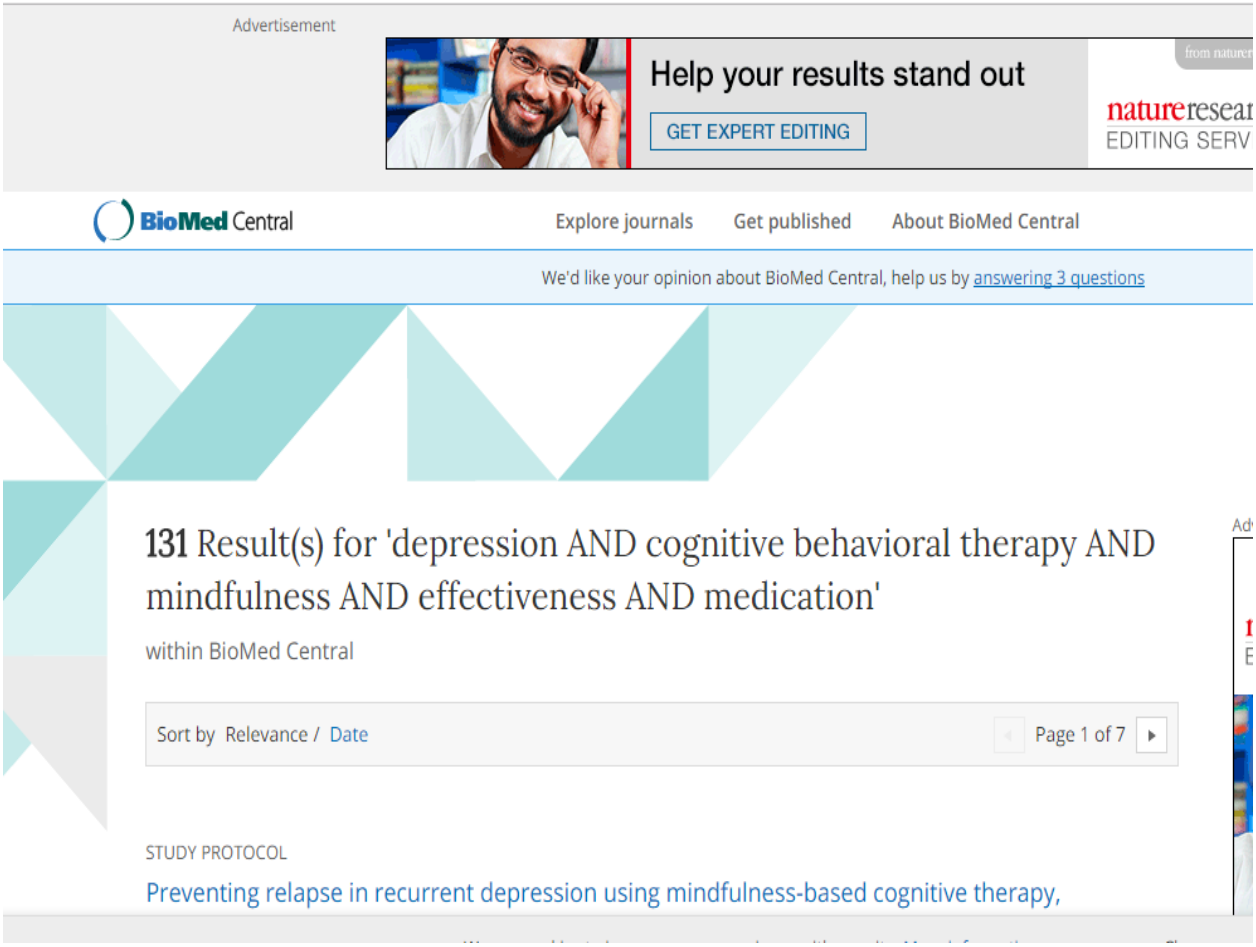
Appendix H

JSTOR Search Strategy



Appendix I

BioMed Central Search Strategy



Appendix J

Evaluation Table

Citation	**Conceptual Framework**	**Design/ Method/ Purpose**	**Sample/Setting**	**Major Variables Studied and Their Definitions**	**Measurement/ Instrumentation**	**Data Analysis**	**Findings/ Themes**	**Level of Evidence; Application to practice**
Butler (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses Funding unknown. No conflicts or biases recognized USA	Integrated Pender Health Promotion	**Design**: SR **Purpose:** Finding effect sizes of CBT versus control treatments	N = 16 meta-analyses (332 studies) n = 9, 995 subjects **Inclusion Criteria:** RCT Address outcomes Focus on disorder **Exclusion Criteria:** Non-English language Does not distinguish CBT from other psychosocial interventions	IV1: CBT IV2: AD IV3: CBT and AD IV4: CBT and OTH DV:DEP	BDI	Meta-analysis	IV1: ES 0.82 IV2: ES 0.38 IV3: ES 0.05 IV4: ES 0.24 SD Long term effectiveness of CBT versus pharmacotherapy CT treatment produced relapse rates half of those on AD for DEP CBT superior to controls or placebo	**Level of Evidence:** LOE I **Strengths:** Randomized clinical trials **Weaknesses:** Some studies did not control for medication response or tapering of medication in comparison to ending CBT. **Conclusions:** CBT and pharmacotherapy combination more effective than either one alone.

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV-**dependent variable; **ES –** effect size; **GRID-HAMD-**GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD-**Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C-**Inventory of Depressive Symptomology; **IV-** independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N-**number of studies; **n-**number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH-**other psychotherapies; **PE-**psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR-**quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
								Feasibility: Studies found that CBT more cost effective, lower chance of relapse than on AD alone.
Chiesa (2012) Mindfulness-based cognitive therapy versus psycho-education for patients with major depression who did not achieve remission following antidepressant treatment: A preliminary analysis Funded by the University of Bologna.	Health Promotion Model	**Design**: RCT **Method**: Patients diagnosed with MD on 8 weeks of AD without remission exposed to two treatments. Measurements taken at baseline, 4 wk, and 8 wk **Purpose:** Comparison of MBCT with PE control group	n = 29 9 received MBCT 7 received PE 3 dropped out 11 excluded **Inclusion Criteria:** Diagnosed with MD 8 weeks of AD treatment without remission **Exclusion:** Current or past psychosis, bipolar, or	IV1: MBCT+AD IV2: PE+AD DV: DEP	HAMD BDI PGWBI	ANOVA t-test	HAMD IV1: 7.66 IV2: 14.00 p = 0.04 PGWBI IV1: 70.44 IV2: 52.33 p = 0.05 Depression lower utilizing MBCT. Quality of life is better in MBCT group.	**Level of Evidence:** LOE II **Strengths:** Randomized clinical trials **Weaknesses:** Small sample size Lack of follow up measure **Conclusions:** MBCT superior over PE for MD patients who did not achieve remission after AD. **Feasibility:** Studies found that CBT more cost effective, lower

Key: **ACC**-Active control condition; **ANOVA**-analysis of variance; **AD**-anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI**-Brief Symptom Inventory; **CBT**-cognitive behavioral therapy; **CT –** cognitive therapy; **DAS**-dysfunctional attitude scale; **DEP**-depression; **DSM IV**-Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV**-dependent variable; **ES –** effect size; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI**-Global Severity Index; **HAMD**-Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C**-Inventory of Depressive Symptomology; **IV**- independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N**-number of studies; **n**-number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH**-other psychotherapies; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
No conflicts of interest or bias noted. Italy.			substance use; Current neurological conditions; Current engagement with other mindfulness or yoga practice					chance of relapse than on AD alone.
DeRubeis (2005). Cognitive therapy vs medications in the treatment of moderate to severe depression. Funded by University of California. No conflicts of interest or bias. USA.	Pender Health Promotion	**Design**: RCT **Method**: Comparison CT versus AD over 16 weeks ; Random assignment **Purpose:** To compare efficacy in moderate to severe antidepressant medications with CT in placebo-controlled trial	n = 240 120 on AD 60 on CT 60 on placebo **Inclusion Criteria**: Age 18-70; moderate to severe depression Fluent in English, met DSM IV criteria for unipolar major depressive disorder, minimum 2 weeks of AD,	IV1: AD IV2: CT IV3: Placebo DV: DEP	HAMD	Chi square t-tests	Remission rates lower with IV2: at p = .05 No significant difference between treatments, but interaction found regarding expertise of therapist	**Level of Evidence:** LOE II **Strengths:** Randomized clinical trials **Weaknesses:** Varying degree of CT therapist **Conclusions:** CT as effective as medications for initial treatment of moderate to severe DEP **Feasibility:** Studies found that CBT as

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV-**dependent variable; **ES –** effect size; **GRID-HAMD-**GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD-**Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C-**Inventory of Depressive Symptomology; **IV-** independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N-**number of studies; **n-**number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH-**other psychotherapies; **PE-**psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR-**quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL-** World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
			Exclusion Criteria: History of bipolar disorder, psychosis, substance abuse, imminently suicidal, currently enrolled in other therapy, cognitive impairment					effective as AD
Eisendrath (2015). A preliminary study: Efficacy of mindfulness-based cognitive therapy versus sertraline as first-line treatments for major depressive disorder.	Pender Health Promotion	**Design**: NRCT **Method:** Comparison of MBCT monotherapy versus AD monotherapy following 8 weeks of AD therapy; Data collected at baseline – 2	n = 23 IV n = 20 Control **Inclusion**: Age 18-70, Not taking medications, diagnosed with DEP **Exclusion:** Suicide risk, history of	IV1: MBCT IV2: AD DV: DEP	HAMD QIDS-SR	Pearson Chi Square t- test	HAMD – no significant change in groups $t(34) = 1.42$ $p = 0.165$ Both effective at decreasing depressive symptom ratings QIDRS-SR16 $t(32) = 4.39$	**Level of Evidence:** LOE III **Strengths:** **Weaknesses:** Non-randomized, Small Sample **Conclusions:** MBCT effective as monotherapy in treatment of DEP

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV-**dependent variable; **ES –** effect size; **GRID-HAMD-**GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD-**Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C-**Inventory of Depressive Symptomology; **IV-** independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N-**number of studies; **n-**number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH-**other psychotherapies; **PE-**psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR-**quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL-** World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
Funding by NIH/National Center for Complementary and Alternative Medicine (NCCAM) No conflicts of interest or bias noted. USA		weeks prior to MBCT and 2 weeks after **Purpose:** Investigate efficacy of MBCT monotherapy compared to Sertraline (AD) monotherapy	schizophrenia, OCD, Bipolar Disorder, Inability to understand English, history of meditation practice more than 1 per week, practicing yoga 2 times per week, alcohol or substance use within 6 months, cognitive impairment				p <0.001 MBCT group showed higher resiliency through QIDS-SR (self-reported)	**Feasibility:** Cost-effective and sustainable
Hollon (2012). Effect of cognitive therapy with antidepressant medications vs antidepressants alone on the rate of recovery in major depressive disorder: A	Pender Health Promotion	**Design**: RCT **Method:** Comparison of AD therapy alone versus combination of CT + AD (randomly assigned); Followed for 42	n = 452 227 = CT + AD 225 = AD **Inclusion**: Age 18 and older, failed at least 2 trials of AD, moderate to severe TRD, MD, Current AD	IV1: CT + AD IV2: AD DV: DEP	HAMD LIFE	SAS Version 9. 2 tailed 2 test Subdistribution Hazard Model	Combined treatment enhanced rate of recovery IV1: 75.2% IV2: 65.6% p = 0.02	**Level of Evidence:** LOE II **Strength:** Randomized clinical trials **Weaknesses:** Confounding variable of treatment preference **Conclusions:** CT and

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV-**dependent variable; **ES –** effect size; **GRID-HAMD-**GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD-**Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C-**Inventory of Depressive Symptomology; **IV-** independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N-**number of studies; **n-**number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH-**other psychotherapies; **PE-**psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR-**quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL-** World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
randomized clinical trial. Funding by National Institute of Mental Health, Pfizer and Werth Pharmaceuticals. Conflicts of interest include Pfizer and Werth pharmaceuticals. Dr. Hollon and Dr. DeRubeis have previous studies of CT. USA		months **Purpose:** Determine effects of CT with AD versus AD alone	use **Exclusion**: Suicide risk, psychosis, OCD, Bipolar Disorder, Inability to understand English, history of meditation practice alcohol or substance					AD combination enhances rates of recovery for MD compared to AD alone **Feasibility:** Cost-effective and sustainable
Huijbers (2016). Patients with a preference for medication do equally well in mindfulness-based cognitive	Pender Health Promotion	**Design**: Parallel RCT **Method**: Comparison of MBCT and AD with preference	n = 317 MBCT preference treated with MBCT+AD versus MBCT only= 249	IV1: MBCT + AD + MBCT preference IV2: MBCT +AD + AD preference DV: DEP	IDS-C WHOQOL	ANOVA Pearson Chi Square Test Cox Regression Proportional Hazards Model	Preference did not affect adherence to either MBCT or AD. Preference not associated for	**Level of Evidence:** LOE II **Strength:** Randomized clinical trials - parallel

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV**-dependent variable; **ES –** effect size; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD**-Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C**-Inventory of Depressive Symptomology; **IV**- independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N**-number of studies; **n**-number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH**-other psychotherapies; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
therapy for recurrent depression as those preferring mindfulness. Funding unknown. No conflicts noted. Netherlands		for MBCT versus MBCT and AD with those preferring AD. 2 parallel RCT Studied for 15 months **Purpose:** Investigate whether preference for MBCT or AD to prevent relapse in DEP was associated with patient characteristics, treatment adherence , or outcome	AD preference treated with MBCT+AD compared to AD alone= 68 154 received both MBCT and AD treatment 12 secondary and tertiary psychiatric outpatient clinics **Inclusion:** Age 18 and older, Dutch Speaking, at least 3 episodes of DEP, full or partial remission, on AD for at least 6 months **Exclusion:** Not mentioned			Latent Growth Curve Model in MPlus version 7 SPSS 20.0	treatment outcome and recurrence of DEP, severity of residual symptoms, Chi-2 = 0.07 p = 0.80, or quality of life. p = 0.49	**Weaknesses:** Group preferring AD was small **Conclusions:** Preference for MBCT or AD did not affect recurrence or adherence: MBCT effective in treatment of DEP **Feasibility:** Cost-effective and sustainable

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV-**dependent variable; **ES –** effect size; **GRID-HAMD-**GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD-**Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C-**Inventory of Depressive Symptomology; **IV-** independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N-**number of studies; **n-**number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH-**other psychotherapies; **PE-**psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR-**quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL-** World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
Kuyken (2015) Effectiveness and cost-effectiveness of mindfulness-based cognitive therapy compared with maintenance antidepressant treatment in the prevention of depressive relapse or recurrence (PREVENT): A randomised controlled trial. Funding: National Institute for Health Research (NIHR) Health Technology Assessment (HTA)	Social Cognitive Theory Health Promotion	**Design**: RCT **Method**: Single-blind, parallel, group randomized controlled trial. Monitoring for 24 months for relapse, assessed at 6 timepoints. **Purpose:** To see whether MBCT with support to taper or discontinue AD were superior to maintenance AD treatment	n = 424 212 = AD 212 = MBCT **Inclusion**: Adult patients, three or more MD episodes, on maintenance dose of AD, full or partial remission of DEP **Exclusion**: Current MD episode, organic brain damage, current or past psychosis, bipolar disorder, persistent antisocial behavior	IV1: MBCT+AD IV2: AD DV: DEP	GRID-HAMD BDI WHOQOL	Cox regression proportional hazards Model Stata v.13	46% relapse in MBCT group 49% relapse in AD group Non-significant reduction p = 0.14 Probability of MBCT being more cost effective than AD is 52% In patients who report childhood abuse, MBCT is more effective than AD for relapse of DEP	**Level of Evidence:** LOE II **Strength:** Randomized clinical trial **Conclusions:** MBCT not superior to AD for prevention of relapse. Both interventions had positive outcomes for relapse recurrence, residual depressive symptoms, and quality of life **Feasibility:** Tradeoff between either MBCT or AD; but both improve QOL and DEP

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV**-dependent variable; **ES –** effect size; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD-**Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C**-Inventory of Depressive Symptomology; **IV**- independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N**-number of studies; **n**-number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH**-other psychotherapies; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
programme, and NIHR Collaboration for Leadership in Applied Health Research and Care South West Peninsula 2 authors are co-directors of Mindfulness Network Community Interest Company United Kingdom.								
Lenz (2016). Meta-analysis of group mindfulness-based cognitive therapy for decreasing symptoms of	Social Cognitive Theory Health Promotion Model	**Design**: RCT Meta-Analysis **Method**: Meta-analysis RCTs **Purpose:** To what degree is	N = 31 n = 2352 1169 = MBCT 596 = OTH 587 = No Treatment Inclusion: RCT,	IV1: MBCT IV2: OTH IV3: No Treatment DV: DEP		Comprehensive Meta-Analysis Version 3.3 Hedges G Cochran's Q	Mean effect size - 0.76, participants in MBCT reported depressive symptoms 76% of 1 standard deviation less than those IV3. p = 0.01	**Level of Evidence:** LOE I **Strength:** Randomized clinical trials - meta-analysis **Weaknesses:**

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Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
acute depression Funding unknown. No conflicts of interest or bias. US and Europe.		MBCT effective in reducing symptomology for depression	8-week MBCT protocol, acute depression, peer reviewed, English language Exclusion: Taking MBCT for secondary symptoms associated with health concerns				Mean effect size is -0.54, for MBCT versus IV2. P<.01 Significant findings, but many international studies and higher incidence toward women	Authors note more robust data with youth and adolescents include, can improve with gender and educational identifiers **Conclusions:** MBCT produced large and medium size effects when comparing to no treatment or other alternative treatment. **Feasibility:** Low risk and useful as intervention for DEP
Lutz (2016). Clinical effectiveness of cognitive behavioral therapy for depression in routine care: A propensity score	Social Cognitive Theory Health Promotion Model	**Design**: RCT **Method**: Stepwise matching; Propensity score matching **Purpose:** To determine if similar effects of	n = 574 From outpatient clinic; other data from 1989 **Inclusion**: MD diagnosis, ages between	IV1: CBT in RCTs IV2: CBT in natural sample DV: Dep	BDI HSCL-90 GSI DAS	Independent t test Chi square test	Effects of CBT larger in RCT than in naturalistic sample ATT = .21 Recovery rate higher in naturalistic sample	**Level of Evidence:** LOE II **Strength:** Randomized clinical trial **Weaknesses:** Different countries of samples, may increase

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV**-dependent variable; **ES –** effect size; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD**-Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C**-Inventory of Depressive Symptomology; **IV**- independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N**-number of studies; **n**-number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH**-other psychotherapies; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
based comparison between randomized controlled trials and clinical practice. Funding unknown. No conflicts of interest or bias. USA and Germany.		CBT can be observed in routine care as compared to those run in RCTs which utilize highly structured manuals.	21-60, minimum 8th grade education **Exclusion:** no psychosis, schizophrenia, bipolar disorder, organic brain disease, no physical illness				Chi square = 3.97 p = 0.04	number of covariates Cultural differences and actuality of data. Lack of control for medication. Authors report small sample size **Conclusions:** CBT in naturalistic setting was as effective as in RCT; however treatment lasted longer. **Feasibility:** CBT useful in natural settings
Meuldijk (2016) The clinical effectiveness of concise cognitive behavioral therapy with or without pharmacotherapy	Social Cognitive Theory Health Promotion Model	**Design**: RCT **Method**: Two-armed randomized control trial Followed at baseline, 3, 6, and 12 month period **Purpose**:	n = 182 89 standard care 93 concise care 5 Dutch outpatient Mental Healthcare Centers	IV1: CBT IV2: CBT + AD IV3: TAU (AD) Concise CBT 4-7 times in 7	BSI WSQ ROM	Generalized Estimated Equations SPSS 20	Severity of illness reduced Both treatment improved health status and quality of life	**Level of Evidence:** LOE II **Strength:** Randomized clinical trial **Weaknesses:** Different countries of samples, may increase

Key: **ACC**-Active control condition; **ANOVA**-analysis of variance; **AD**-anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI**-Brief Symptom Inventory; **CBT**-cognitive behavioral therapy; **CT –** cognitive therapy; **DAS**-dysfunctional attitude scale; **DEP**-depression; **DSM IV**-Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV**-dependent variable; **ES –** effect size; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI**-Global Severity Index; **HAMD**-Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C**-Inventory of Depressive Symptomology; **IV**- independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N**-number of studies; **n**-number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH**-other psychotherapies; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
for depressive and anxiety disorders; a pragmatic randomized controlled equivalence trial in clinical practice. Funding unknown. No conflicts of interest or bias. Netherlands.		Investigate whether concise formats of cognitive behavioral and/or pharmacotherapy are equivalent to longer standard care in treatment of DEP and anxiety	Inclusion: Adults ages 18-65, diagnosis of MD or anxiety Exclusion:	weeks; AD: 4 sessions in 7 weeks versus Standard CBT – Every 2-3 weeks for 3-6 months up to a year; AD: 1 year or longer				number of covariates Cultural differences and actuality of data. Lack of control for medication. Authors report small sample size **Conclusions:** Both treatments beneficial and faster response observed with concise treatment **Feasibility:** Low risk and useful as intervention for DEP
Omidi (2013). Comparing mindfulness based cognitive therapy and traditional cognitive behavior therapy with treatments as usual on	Health Promotion	**Design:** RCT **Purpose:** Examine efficacy of MBCT in psychiatric symptoms and well-being of patients	n = 90 30 per intervention	IV1: MBCT + AD IV2: CBT + AD IV3: TAU(AD) DV: DEP	BSI	ANOVA F	MBCT and CBT equally effective in reduction of MDD symptoms Both superior to medication alone	**Level of Evidence:** LOE II **Strengths:** Randomized clinical trials **Weaknesses:** All patients were on AD

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Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
reduction of major depressive disorder symptoms Iran. No funding mentioned. No bias.								**Conclusions:** MBCT effective in reducing perceived stress and depression; Adjunct treatment superior to treatment alone **Feasibility:** Cost-effective and sustainable
Shallcross (2015). Relapse prevention in major depressive disorder: Mindfulness-based cognitive therapy versus an active control condition. US. No funding stated.	Health Promotion Model	**Design:** RCT **Method:** 8-week exposure to MBCT or ACC; 60 week follow up **Purpose:** Compare effectiveness of MBCT and ACC for relapse prevention,	n = 92 IV1 – 46 IV2 - 46 **Inclusion**: Adult patients 18-65, at least 1 episode of DEP, remission for at least 1 month, No AD changes in 3 weeks **Exclusion**: Current MD	DV: DEP IV1: MBCT IV2: ACC/HEP	BDI SWL	Fisher's Mann-Whitney	MBCT did not differ significantly from ACC Improvement in life satisfaction with MBCT Symptom reduction initially faster in ACC, but then increased. Symptoms in MBCT gradually	**Level of Evidence:** LOE II **Strengths:** Randomized clinical trials **Weaknesses:** Participants permitted to seek additional outside treatment; Some facets of HEP similar to MBCT; Low retention rate

Key: **ACC-**Active control condition; **ANOVA-**analysis of variance; **AD-**anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI-**Brief Symptom Inventory; **CBT-**cognitive behavioral therapy; **CT –** cognitive therapy; **DAS-**dysfunctional attitude scale; **DEP-**depression; **DSM IV-**Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV**-dependent variable; **ES –** effect size; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI-**Global Severity Index; **HAMD**-Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C**-Inventory of Depressive Symptomology; **IV**- independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N**-number of studies; **n**-number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH**-other psychotherapies; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
No bias.		depression symptom reduction, improvement in life satisfaction	episode, organic brain damage, current or past psychosis, bipolar disorder, persistent antisocial behavior				decreased	**Conclusions:** MBCT effective in reducing DEP symptoms, prevents relapse, and improves life satisfaction **Feasibility:** Cost-effective and sustainable
Shinohara (2013). Behavioural therapies versus other psychological therapies for depression. Multiple countries, primarily Japan. No funding specified.	Health Promotion Model	**Design:** SR **Method:** 60 week follow up **Purpose:** Compare effects of behavioral health approaches compared with different psychological therapies for acute depression	n = 955 **Inclusion:** RCT Men and women older than 18 Patients in outpatient setting Acute phase of depression Receiving treatment AD Suicide Risk included **Exclusion:** Men and women older than 74		BDI HAMD MADRS	Mean Difference 95% Confidence Intervals	Low-quality evidence shows response to cognitive behavioral therapies than to behavioral therapies RR 0.93 (0.83 to 1.05) 7% decrease risk of increasing depression	**Level of Evidence:** LOE I **Strengths:** Randomized clinical trials **Weaknesses:** Some studies allowed for replacement of dropouts without randomization Contrary to other studies included patients with suicide risk

Key: **ACC**-Active control condition; **ANOVA**-analysis of variance; **AD**-anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI**-Brief Symptom Inventory; **CBT**-cognitive behavioral therapy; **CT –** cognitive therapy; **DAS**-dysfunctional attitude scale; **DEP**-depression; **DSM IV**-Diagnostic and Statistical Manual of Mental Disorders (4th ed); **DV**-dependent variable; **ES –** effect size; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI**-Global Severity Index; **HAMD**-Hamilton rating scale for depression; **HEP** - health enhancement program; **HSCL-90 –** Hopkins Symptom Checklist-90; **IDS-C**-Inventory of Depressive Symptomology; **IV**- independent variable; **IV2-** independent variable 2; **LIFE-** longitudinal interval follow-up examination; **MA** – Meta-analysis; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **MD –** major depression; **N**-number of studies; **n**-number of participants; **NRCT** – Non-randomized controlled trial; **OCD –** obsessive compulsive disorder; **OTH**-other psychotherapies; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review;**SWL –** Satisfaction with Life Scale; **TAU** – Treatment as usual antidepressant; **TRD –** treatment resistant depression; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire

Citation	Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Major Variables Studied and Their Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level of Evidence; Application to practice
No bias noted.			Inpatient setting patients No mixed diagnosis besides depression					**Conclusions:** CT therapies created higher response compared to behavioral therapies **Feasibility:** Provides some support for use of CT

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Appendix K

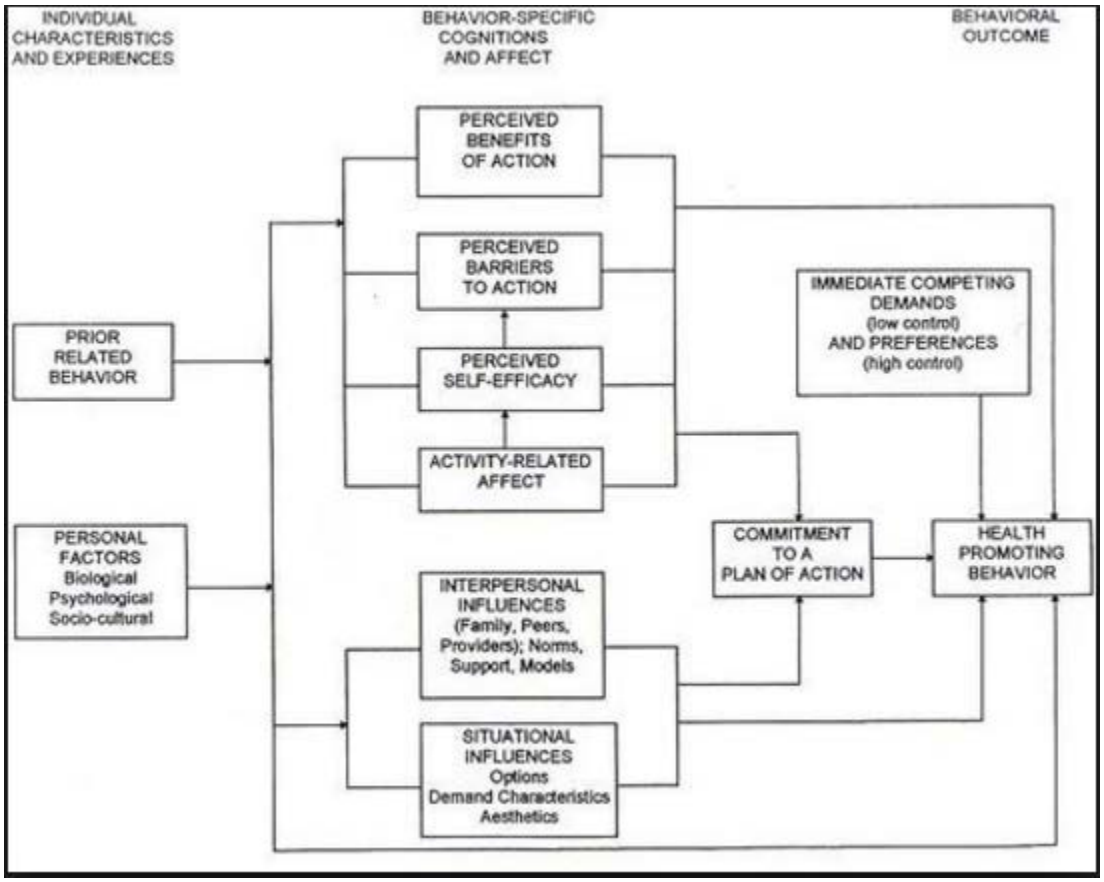
Synthesis Table

	Studies	Butler	Chiesa	DeRubeis	Eisendrath	Hollon	Huijbers	Kuyken	Lenz	Lutz	Meuldijk	Omidi	Shallcross	Shinohara
Basics	Year	2006	2012	2005	2015	2012	2016	2015	2016	2016	2016	2013	2015	2013
	LOE	I	II	II	III	I	II	II	I	II	II	II	II	I
	Design	SR	RCT	RCT	NRCT	RCT	RCT	RCT	RCT	RCT	RCT	RCT	RCT	SR
	n	106	29	240	43	452	317	424	2352	574	182	90	92	955
Tools	HAMD-D		X	X	X	X	X	X	X					B
	BDI		X					X					X	X
	MADRS													X
	QIDSR				X									
	SWL												X	
	ROM										X			
	BSI									X	X			
	WSQ										X			
	IDS-C						X							
	WHOQOL						X	X						
	GSI									X				
	PGWBI		X											
Interventions	CBT	X		X		X			X	X	X			X
	MBCT				X		X							X
	AD	X		X	X	X	X	X		X		X		
	CBT + AD		X								X	X	X	
	MBCT + AD		X					X				X	X	
	PE		X						X					X
Major findings	↓ DEP	X	X	X		X	X	X	↓↓↓	↓↓	X		X	↓
	↓ Recur		X	X	↓			X			X		X	↓
	↓ Relapse		X	X		X	X	X	X	X	X	X	X	↓
	↑ QOL		↑↑↑				↑↑	↑			↑↑↑		↑↑↑	

Key: **AD**-anti-depressant therapy; **BDI** – Beck Depression Inventory; **BSI**-Brief Symptom Inventory; **CBT**-cognitive behavioral therapy; **CT –** cognitive therapy; **DAS**-dysfunctional attitude scale; **DEP**-depression; **GRID-HAMD**-GRID Hamilton rating scale for depression; **GSI**-Global Severity Index; **HAMD**-Hamilton rating scale for depression; **MADRS –** Montgomery-Asberg Depression Rating Scale; **MBCT** – mindfulness-based cognitive therapy; **n**- number of participants; **NRCT** – Non-randomized controlled trial; **PE**-psychoeducation; **PGWBI** – psychological well-being index; **QIDS-SR**-quick inventory of depression symptomatology self report; **RCT** – randomized controlled trial; **ROM –** Routine Outcome Monitoring; **SR –** Systematic review; **WHOQOL**- World health organization quality of life; **WSQ** – Web Screening Questionnaire; ↑ - increase; ↓ = decrease

Appendix L

Pender Health Promotion Model



Appendix M

ACE Star model of EBP

Appendix N

Patient Health Questionnaire-9 (PHQ-9)

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____

=Total Score: _____

Appendix O

Generalized Anxiety Disorder Scale-7 (GAD-7)

GAD-7

Over the last 2 weeks, how often have you been bothered by the following problems? *(Use "✔" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

(For office coding: Total Score T____ = ____ + ____ + ____)

Appendix P

Mindfulness Attention Awareness Scale

Day-to-Day Experiences

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what *really reflects* your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	2	3	4	5	6
Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	5	6
I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
I forget a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	4	5	6
I rush through activities without being really attentive to them.	1	2	3	4	5	6
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	1	2	3	4	5	6
I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
I find myself listening to someone with one ear, doing something else at the same time.	1	2	3	4	5	6

I drive places on 'automatic pilot' and then wonder why I went there.	1	2	3	4	5	6
I find myself preoccupied with the future or the past.	1	2	3	4	5	6
I find myself doing things without paying attention.	1	2	3	4	5	6
I snack without being aware that I'm eating.	1	2	3	4	5	6

Appendix Q

Sample Demographics

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	6	35.3	35.3	35.3
	25-34	7	41.2	41.2	76.5
	35-44	4	23.5	23.5	100.0
	Total	17	100.0	100.0	

Ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	7	41.2	41.2	41.2
	Hispanic or Latino	7	41.2	41.2	82.4
	Black or African American	2	11.8	11.8	94.1
	Hawaiian/Pacific Islander	1	5.9	5.9	100.0
	Total	17	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	17	100.0	100.0	100.0

School

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	64.7	64.7	64.7
	Yes	6	35.3	35.3	100.0
	Total	17	100.0	100.0	

Highest Level Completed

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Some high school, No Diploma	4	23.5	23.5	23.5
	High School Graduate/GED	1	5.9	5.9	29.4
	Some College	9	52.9	52.9	82.4
	Associate's Degree	2	11.8	11.8	94.1
	Bachelor's Degree	1	5.9	5.9	100.0
	Total	17	100.0	100.0	

Employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Self-Employed	1	5.9	5.9	5.9
	Employed Full Time	4	23.5	23.5	29.4
	Employed Part Time	3	17.6	17.6	47.1
	Homemaker	5	29.4	29.4	76.5
	Student	4	23.5	23.5	100.0
	Total	17	100.0	100.0	

Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 - 24,9999	13	76.5	76.5	76.5
	25,000 - 49,999	4	23.5	23.5	100.0
	Total	17	100.0	100.0	

Appendix R

Paired Samples Statistics

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PHQ-9 Baseline	16.7059	17	4.72711	1.14649
	PHQ-9 30 days	12.8824	17	4.96088	1.20319
Pair 2	GAD-7 Baseline	16.9412	17	2.63322	.63865
	GAD-7 30 days	11.4118	17	4.50082	1.09161
Pair 3	MAAS Baseline	40.0588	17	10.64466	2.58171
	MAAS 30 days	48.3529	17	11.32994	2.74792

Appendix S

Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PHQ-9 Baseline - PHQ-9 30 days	3.82353	5.16279	1.25216	1.16907	6.47799	3.054	16	.008
Pair 2	GAD-7 Baseline - GAD-7 30 days	5.52941	5.02640	1.21908	2.94507	8.11375	4.536	16	.000
Pair 3	MAAS Baseline - MAAS 30 days	-8.29412	5.31231	1.28842	-11.02545	-5.56278	-6.437	16	.000

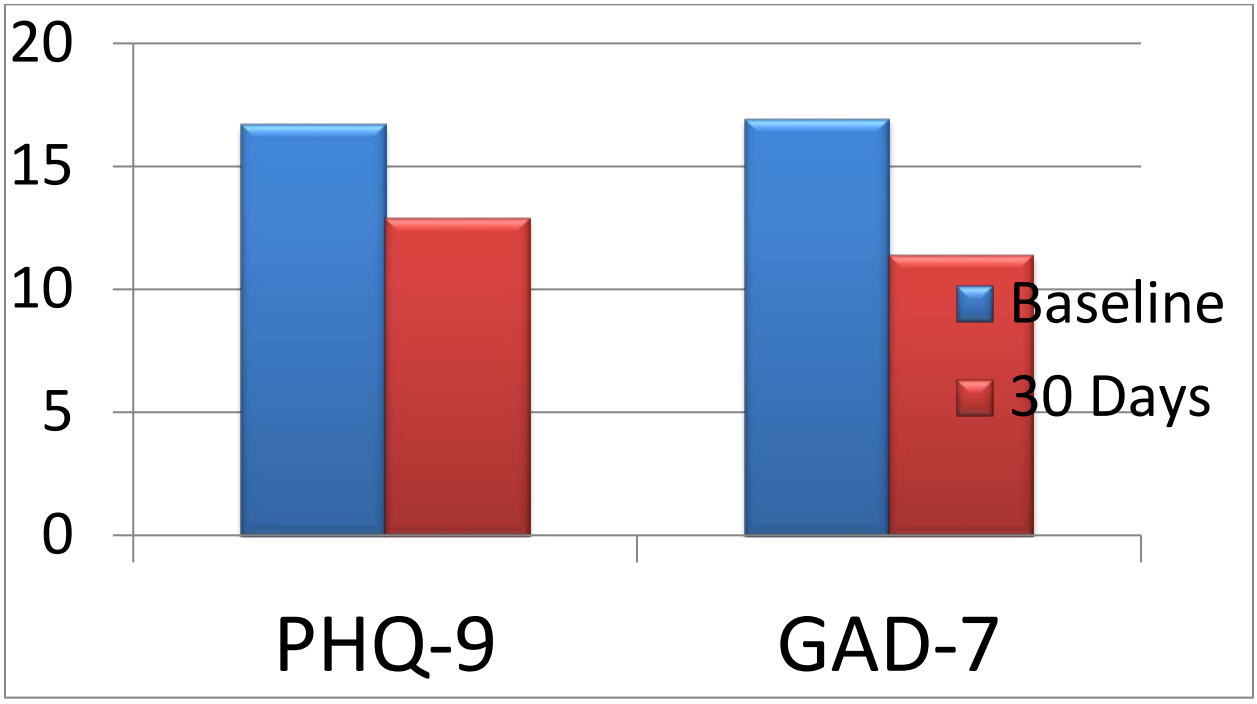


Figure 1. Mean scores for depression and anxiety both before and after the intervention. Both scores decreased (improved) after the intervention.

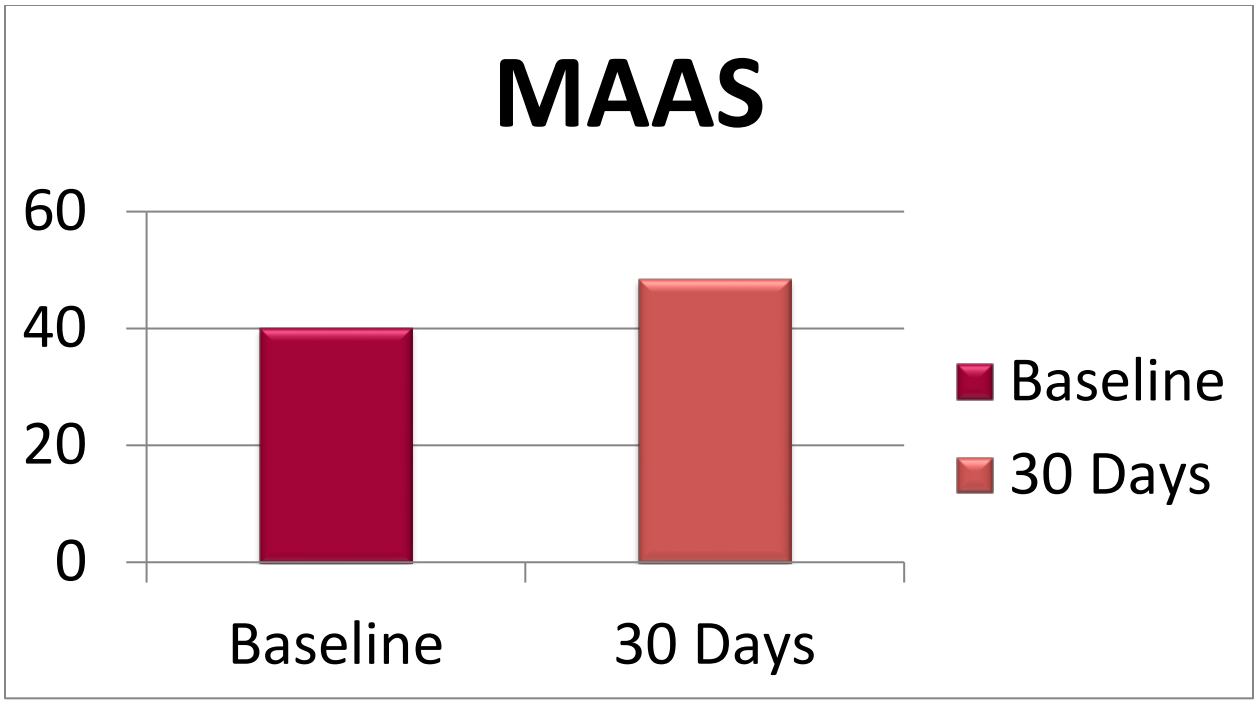


Figure 2. Mean scores for mindfulness before and after the intervention. Mindfulness scores increased (improved) after the intervention.

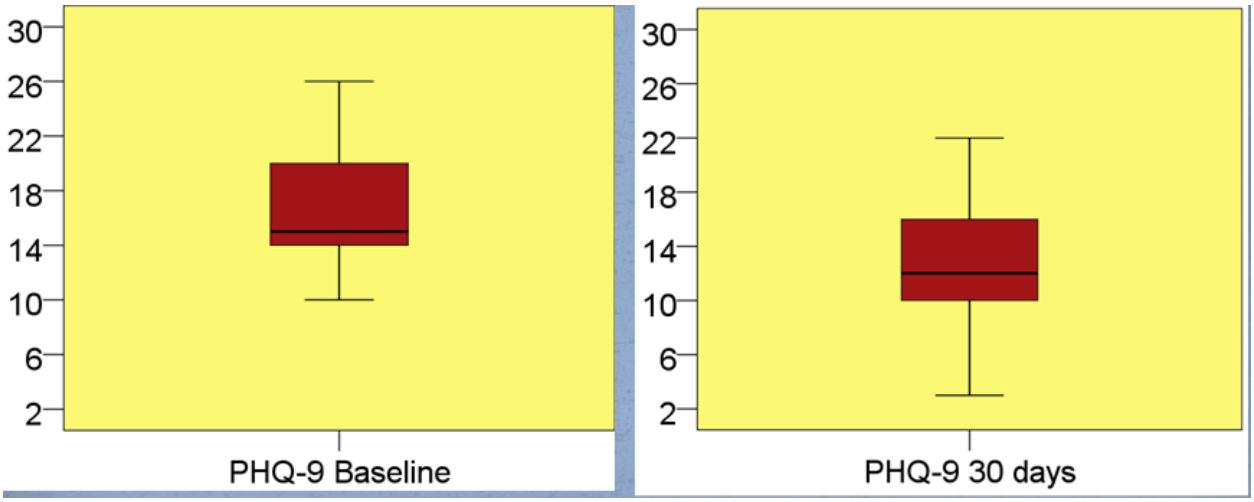


Figure 3. Box and whisker plot demonstrating improved mean after intervention for depression. After intervention, smallest score for PHQ-9 was 3. Range was from 3 to 22.

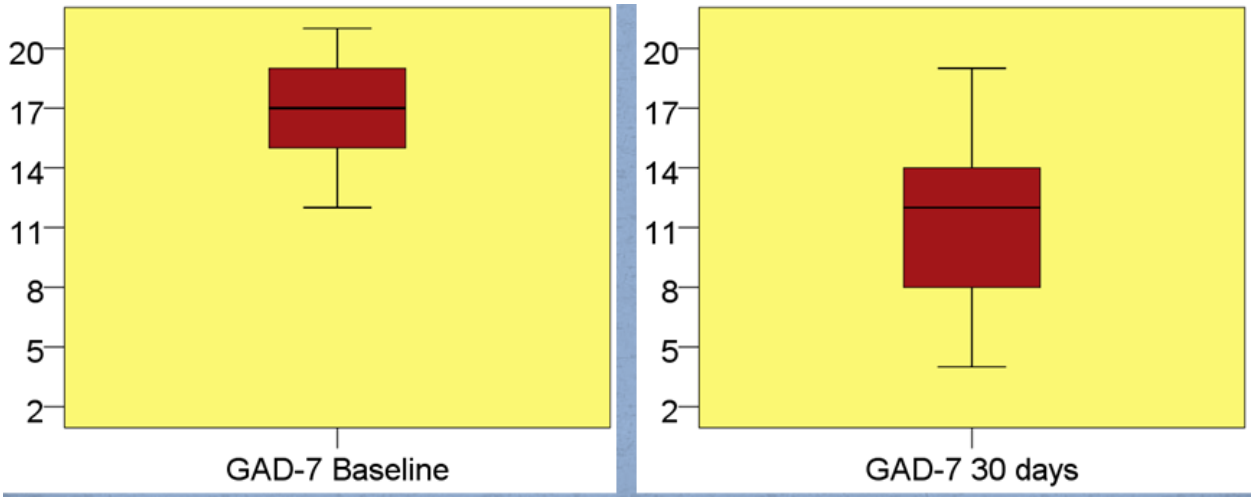


Figure 4. Box and whisker plot for anxiety scores demonstrating significant reduction in GAD-7 scores. Post intervention, majority of scores are at or below 12, with the lowest score being a 4. Range from 4 to 19.

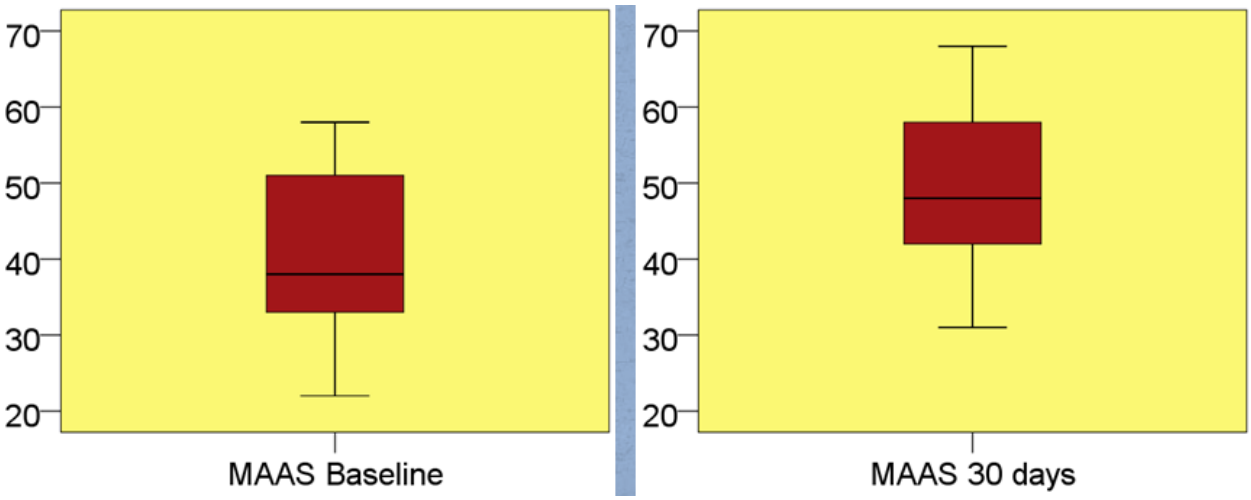


Figure 5. Box and whisker plot for mindfulness scores demonstrating significant improvement in MAAS scores. Post intervention, majority of scores are above 50, with the range from 31 to 63. Pre-intervention, the range was 22 to 58.