

Running Head: TREATMENT PREFERENCE

1

TREATMENT PREFERENCE FOR MAJOR DEPRESSIVE DISORDER

by

Taylor Michelle Szucs

Honors Thesis

Appalachian State University

Submitted to the Department of Psychology
and The Honors College

in partial fulfillment of the requirements for the degree of

Bachelor of Science

May, 2017

Approved by:

Joshua Broman-Fulks, Ph.D, Thesis Director

Chishimba Mowa, Ph. D, Second Reader

Andrew Smith, Ph.D, Departmental Honors Director

Ted Zerucha, Ph.D., Interim Director, The Honors College

Abstract

Recent research on treatment preference for individuals with major depressive disorder indicates a three to one ratio of preference for cognitive behavioral therapy over medication. There has been little to no research on treatment preference for exercise. Exercise has the properties of being easily accessible and cost efficient, where other treatments may be costly. The present study investigates treatment preference for major depressive disorder with the inclusion of exercise as one of the treatment options. There was a total of 389 participants who completed a questionnaire that included a scenario of someone who was diagnosed with major depressive disorder, followed by questions with regards to how likely each participant would choose Sertraline, cognitive behavioral therapy, or exercise, and if the participants could only choose one treatment option, which one would they prefer. Results were consistent with previous research where cognitive behavioral therapy was significantly preferred over Sertraline. When exercise was compared to Sertraline, participants significantly preferred exercise over Sertraline. There are implications for future research in relation to treatment preference of exercise for major depressive disorder.

Introduction

The psychological disorder of depression, also known as the common cold of outpatients, is a significant problem in the United States with about 25 million people meeting the criteria for some type of depressive disorder (Keller, 1994). Major depressive disorder alone affects about 15 million people, which is about 6.7 percent of Americans (Facts & statistics, 2016). According to the Facts & statistics (2016), major depressive disorder is the leading cause of disability among people between the ages of 15 and 44, and can interfere with daily life goals or activities such as education and stability in marriages (Kessler, 2012). For example, previous research has shown that major depressive disorder is associated with 60% increased risk of failure to complete intermediate school, and depressed individuals are much more likely to experience marital divorce (Breslau et al., 2011). In addition, major depressive disorder is also associated with increased attention, memory, executive function, and psychomotor speed dysfunction (Gonda et al., 2015). The annual health care costs associated with major depressive disorder are also nearly double the annual health care cost for people who do not meet the criteria for the disorder (Simon, VonKorff, & Barlow, 1995).

Given the societal and personal costs associated with depression, there has been a strong emphasis on identifying and developing effective treatments (Holtzheimer & Mayberg, 2011). To date, several treatments have been shown to be effective in reducing symptoms of depression and improving quality of life. Of the effective treatments, one that is generally administered to people with depression is cognitive behavioral therapy (CBT). In a meta-analysis that analyzed the effectiveness of CBT across 26 studies, researchers found a within-study comparison mean effect size of 1.73 when CBT was compared with the control group (Gaffan, Tsaousis, & Kemp-Wheeler, 1996). In relation to other forms of psychotherapy, the mean effect size of CBT was

0.24. The overall mean effect size for other psychotherapy was 1.28, which was much higher than the waiting-list control mean of 0.13 (Gaffan, Tsaousis, & Kemp-Wheeler, 1996). For the between-studies comparison, researchers found that the mean effect size of CBT, when compared to the control group, was 0.93. When comparing CBT to other psychotherapy, the mean effect size was 0.32 (Gaffan, Tsaousis, & Kemp-Wheeler, 1996). These findings suggest that CBT is significantly more effective than the control group for treating depression.

Antidepressant medication is another form of treatment for treating depression (Pubmed Health, 2017). Previous research on antidepressant medications indicates that the effectiveness of a drug is unpredictable (PubMed Health, 2017). Doctors generally prescribe patients with the most effective medication they know of and if that medication does not work, they switch the patient to a different medication (Smith, 2012). Figuring out the exact medication that works for each patient specifically can be challenging. The effectiveness of antidepressant medication depends primarily on how severe the depression is (Smith, 2012). The more severe the depression is the more effective antidepressant medication is. For instance, Fournier and colleagues (2010) conducted a study that analyzed the effectiveness of antidepressant medication for different severities of depressive symptoms (mild, moderate, severe, or very-severe), and how the effects compared to the placebo. The researchers concluded that for mild to severe depressive symptoms, effectiveness of antidepressant medications did not differ from placebo, whereas effectiveness did differ for very-severe depression (Fournier et al., 2010). Therefore, antidepressant medication best works for patients diagnosed with severe depression.

Alternative interventions are now starting to emerge for treating depression relative to CBT and antidepressant medication. Alternative interventions to the commonly used treatments include exercise, yoga, and meditation (Saeed, Antonacci, & Bloch, 2010). These interventions

have demonstrated effectiveness in previous studies when compared to no-activity controls, and are essentially ideal for easy accessibility (Nahas & Sheikh, 2011). When looking specifically at exercise, in a previous meta-regression that compared exercise with placebo interventions for treating depression, the standardized mean differences in effect size was -1.1 (Lawlor, 2001). These findings suggest that exercise is a viable alternative intervention. Yoga has also shown in previous research to be effective for treating depression. A study that looked at 5 randomized controlled trials found that certain poses have significant effects on reducing depressive symptoms (Pilkington, Kirkwood, Rampes, & Richardson, 2005). For example, individuals who practiced Shavasana had a significantly higher reduction in depressive symptoms compared to the individuals who did not receive an intervention. Yoga as an intervention for depression is still being researched, but has so far been seen as beneficial for treating depression. Meditation as another form of alternative intervention uses mindfulness-based stress reduction. The effectiveness of mindfulness-based stress reduction on mental health has shown to be significant with a Cohen's d of 0.54 (Grossman, Niemann, Schmidt, & Walach, 2004). Overall alternative interventions have demonstrated just as high potentials for efficiently reducing depressive symptoms as CBT and antidepressant medication.

To examine how CBT, antidepressant medication, and alternative interventions compare to one another for treating depressive symptoms, Khan and colleagues (2012) conducted a study that compared the efficacy of each treatment to the other. In a previous study, the effectiveness of CBT was compared to the effectiveness of antidepressant medication for treating depressive symptoms. Khan and colleagues (2012) compiled a meta-analysis that involved data from multiple trial studies conducted by the FDA on antidepressant medication and patients diagnosed with depression. The researchers reviewed previous studies that evaluated the efficacy of

psychotherapy and alternative types of therapy on patients diagnosed with depression. The results of the study indicated that antidepressants had a significantly higher impact on the reduction of depressive symptoms than the placebo (Khan et al., 2012). Interestingly, the treatment type was a significant predictor of symptom reduction for both un-blinded and blinded trials. However, the magnitude of significance differed in the blinded trials. The percent of reduction in symptoms for the blinded trials for combination therapy was 53%, whereas the percent of reduction in symptoms for the un-blinded trials was 66% (Khan et al., 2012). The un-blinded and blinded trials resulted in similar symptom reduction for the treatments of antidepressants, psychotherapy, and intervention control; therefore there is no significant difference in symptom reduction for type of treatment. Khan and colleagues (2012) did find, however, that antidepressants and psychotherapy were superior to all other control treatments, including the placebo control. These findings suggest that even though there may be a placebo effect associated with treating depression, medication and psychotherapy both have higher efficacies when reducing depressive symptoms.

Antidepressant medication and CBT were the dominant forms of treatment for major depression disorder. However, research suggests that several non-clinical interventions are also effective in reducing symptoms of depression (Babyak et al., 2000). For example, numerous studies suggest that regular engagement in physical exercise can lead to significant reductions in depressive symptomology. Babyak and colleagues (2000) designed a study that examined the effectiveness of aerobic exercise across a 4-month period for adults with major depressive disorder. After the 4-month period was over, participants returned for a 6 month follow-up. Of the participants in the exercise group, 60.4% no longer met the DSM-IV criteria for major depression (Babyak et al., 2000). At the 10 month follow-up session, only 30% of the

participants in the exercise group exhibited major depressive symptoms (Babyak et al., 2000). In a similar study, the HRSD scores that were compared before and after administering exercise showed an improvement in depressive symptoms (Singh, Clements, & Fiatarone, 1997). When compared to the control group, depressive symptoms improved 2 to 3 times greater for participants in the exercise group. When looking at response rates for exercise and the control group, 59% of the participants in the exercise group responded to treatment while only 26% responded in the control (Singh, Clements, & Fiatarone, 1997). The control group involved participants attending lectures on health education. These results demonstrate that exercise is an effective form of treatment that has significant results when compared to control conditions.

To support the evidence of exercise as an effective form of treatment, Mead and colleagues (2009) carried out a systematic review that looked at the effectiveness of exercise in treating depression. The studies that they included were randomized controlled trials, and the type of participants were men and women aged 18 and older (Mead et al., 2009). There were two different types of interventions that the researchers looked at within the studies. The interventions included studies comparing exercise with no other intervention and studies comparing exercise to another intervention. The results of the systematic review indicated that exercise has a large effect (-0.82) on depressive symptoms compared with no treatment (Mead et al., 2009). Therefore, exercise has the potential effectiveness to be considered as an alternative for treating depression.

In a recent meta-analysis, Khan and colleagues (2012) compared the efficacy of various treatments for depression, including psychotherapy, medication, and alternative therapies, such as exercise. Exercise appears to be equally effective as psychotherapy and antidepressant medications in treating depression (Khan et al., 2012). All three of the forms of treatment

resulted in the reduction of depressive symptoms. These findings suggest that exercise can be equally as effective for treating depression as psychotherapy and antidepressant medications.

In order to provide the optimal amount of care when treating a patient, research suggests that clinicians should incorporate evidence based practice (Peterson, Becker, Treasure, Shafran, & Bryant-Waugh, 2016). Evidence-based practice is often thought of as a three legged stool that attempts to integrate the best available research evidence, clinical expertise, and patient values, preferences, and characteristics into clinical decision-making. The research evidence aspect of the stool refers to the most current empirical evidence of efficacy and effectiveness for treatment (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). This empirical evidence is based on different research designs such as meta-analysis, randomized controlled studies, and systematic reviews. The importance of empirical evidence when used with clinical expertise and patient values and preferences is that treatments that may not be acceptable to the patients are able to be identified. The three legged stool also allows for dissemination and implantation of evidence based treatments which are significant for selecting patient interventions (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). This allows for the most advanced interventions to be used when personalizing treatments for each patient. This is all determined by how efficiently the clinician is trained to provide treatments that are selected and preferred by patients, thus highlighting how important it is for clinicians and physicians to know what patients want in an intervention (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The last component of empirical evidence is significant in situations where all treatments are equally effective.

The last leg of the stool is patient preference, values, and characteristics (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). When the interventions for treating depression are equally effective, the type of treatment preferred by the patient is important. With regards to

mental health, Peterson and colleagues (2016) stated that researchers study patient perspective and values under the categories of patient preference and expectations. Patient expectations are where the patient foresees the outcomes of the treatment and the probability of improvement (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The expectations underlie the placebo effect to ensure the effectiveness of the actual treatment. Where having the option to choose a preference may not affect the outcome, there may be evidence that suggests patients with motivation to do well will benefit more from the treatment than the patients who have low expectations (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Overall, the need for treatment preference is transparent where patients may benefit more if given control over their treatment with adequate amount of information in relation to the treatment.

To understand the treatment preference among individuals with depression, a study was conducted to identify the preference of pharmacological or psychological treatment for depression (Dwight-Johnson, Sherbourne, Liao, & Wells, 2000). Of the 321 participants, 27% preferred antidepressant medication, 29% preferred individual counselling, and 26% preferred group counselling for treating depression (Dwight-Johnson, Sherbourne, Liao, & Wells, 2000). Participants who had previously received treatment and had symptoms only were more likely to want treatment. Of the patients who preferred medications over counseling, the factors that were associated with this were female gender, African American ethnicity, greater knowledge about counseling, and no recent antidepressant treatment (Dwight-Johnson, Sherbourne, Liao, & Wells, 2000). The study overall found that participants prefer counseling over medication.

With regards to patient preference for treatment, researchers have conducted a meta-analysis that examines patient's preference for psychological or pharmacological treatment for psychiatric disorders (McHugh, Whitton, Peckham, Weldge, & Otto, 2013). Overall the meta-

analysis included 34 studies where there were a total of 90,483 participants. The most commonly examined disorder in the studies was depression (65% of studies). Of the total population of participants, the mean proportion of people who preferred psychological treatment was 0.75 (McHugh, Whitton, Peckham, Weldge, & Otto, 2013). The authors observed that this was significantly higher than the proportion of the participants that chose both psychological and pharmacological treatment as their preference which had a mean proportion of (0.50). Across all subgroups, participants indicated that they preferred psychological treatment over pharmacological treatment (McHugh, Whitton, Peckham, Weldge, & Otto, 2013). Depression was included as one of the subgroups. The treatment seeking sample, when compared to the non-treatment seeking sample, had a higher preference for psychotherapy than pharmacotherapy. In the study, the use of an alternative treatment option did not influence the preference for psychotherapy. Interestingly, McHugh and colleagues (2013) found that age was significantly associated with preference for psychological treatment. Younger participants were more likely to choose psychotherapy than older participants. Another significant finding was that gender was associated with preference for psychological treatment (McHugh, Whitton, Peckham, Weldge, & Otto, 2013). Women preferred psychological treatment at higher rates than men. Therefore, when patients are given the choice as to what type of treatment they prefer for psychiatric disorders, the majority of the time they prefer psychological treatment over pharmacological treatment.

Prior to the McHugh et al. (2013) meta-analysis, Churchill and colleagues (2000) published a study that examined the factors that affected depressed patients' treatment preference. Some of the factors that the researchers studied were sex, age, and previous experience of treated depression. The study in this article involved a self-completion questionnaire survey, where the participant sample included adult patients attending 20 general

practices in the Trent Region (Churchill et al. 2000). There were 895 participants who completed the questionnaire. Of the participants 32% were male and 68% were female. The researchers found that 29.1% of the respondents reported having personal experience of being treated for depression, and of these respondents 75.8% reported they had been previously treated with medications, 28.5% had seen a counsellor or psychologists, and 8% were referred to a psychiatrist (Churchill et al. 2000). Interestingly, men reported that they believed antidepressants were addictive at a higher rate than women. For treatment preference, 50.8% of the respondents favored counselling over drug treatment (15.3%) (Churchill et al. 2000). The association for female sex, previous experience with counselling, and the view that antidepressants are addictive was positive. Interestingly, age was not significantly associated with preference for counseling ($p= 0.673$) while female sex was ($p= 0.005$). Having prior experience with medications was not significantly associated with preferring counselling ($p= 0.490$), but having prior experiences with a counselor was ($p= 0.016$) (Churchill et al. 2000). The researchers concluded that overall counselling is preferred over antidepressants for the treatment of depression.

To look at if patient preference for treatment for depression affected the outcome of treatment, Kwan, Dimidjian, & Rizvi (2010) conducted a study that compared the outcomes for patients' preferences of pharmacotherapy and psychotherapy for depression. There were 106 participants, and of those participants 68 were female and 38 were male (Kwan, Dimidjian, & Rizvi, 2010). Before participants were randomly assigned to conditions, they filled out a questionnaire that asked them about their treatment preference for depression. Participants were then randomly assigned to either the conditions of psychotherapy, antidepressant medication, or placebo pill by a computer generator (Kwan, Dimidjian, & Rizvi, 2010). The Beck Depression Inventory-II and the 17- item Hamilton Rating Scale for Depression were used to assess

depressive severity in the participants. Treatment preference of the participants was assessed by using the Expectations of Treatment Inventory. This allowed for participants to indicate whether or not they would prefer pharmacotherapy, psychotherapy, or neither for treating depression. The participants were also able to report if they expected psychotherapy or pharmacotherapy to yield effective results when treating depression, or if they thought one treatment would benefit more so than the other. The findings of Kwan, Dimidjian, & Rizvi (2010) study, prior to participants being assigned to separate conditions, were that 51 participants (48.1%) preferred psychotherapy, 19 (17.9%) preferred antidepressant medication, and 36 (34.0%) expressed no interest for treatment of depression. There was an association between participants being assigned to the condition of their preference and when they were not. When participants were not matched to their treatment preference, they were more likely to drop-out of the study (Kwan, Dimidjian, & Rizvi, 2010). Participants who were matched with their treatment preference were less likely to drop-out of the study; therefore they had a significant outcome with decreasing depression severity. These results suggest that when patients are able to choose their preferred treatment, they are more likely to continue treatment, thus there is a higher chance that their depressive symptoms will decrease (Kwan, Dimidjian, & Rizvi, 2010).

There is limited evidence and data with regards to the preference for exercise in treating depression. However, Busch and colleagues (2016) analyzed the types of exercise programs and content of the programs participants would want if they were interested in exercise for treatment. The researchers asked the preferences for location, social environment, coaching status, coaching format, frequency, duration, intensity, and the type of exercise. The results indicated that there were significant differences in the preferences of men and women for exercise content and type of exercise program (Busch et al. 2016). The most common preferred exercise among both men

and women was walking. Even though the study only looked at preference for characteristics involving exercise, participants still indicated that they were willing to consider exercise as a treatment even if they were currently in treatment for depression (Busch et al. 2016).

When looking at the preference for exercise relative to psychotherapy and medications, Raue and colleagues (2011) examined depression treatment preference for elderly home care patients. The patients were asked in a survey if they preferred active treatment (antidepressant medication, psychotherapy, or combination) or complementary treatment (spiritual activities or exercise). The findings in the study were 47% of the patients' preferred active treatment, and 53% of the patients' preferred complementary treatment (Raue et al. 2011). When looking at the preferences for patients who were currently using antidepressants, 77% indicated a preference for active treatment while only 57% of the patients who used antidepressants in the past indicated a preference for active treatment (Raue et al. 2011). Overall, there was relatively an equivalent number of patients who chose psychotherapy and antidepressant medication, and exercise was one of the most preferred forms of complementary treatment. There is still a limited amount of research on the preference for exercise when compared to psychotherapy and antidepressant medication among people who are not elderly home care patients.

The current study addresses the gap in research on the preference of exercise for treating depression when patients are given the option of CBT, medication, and exercise. Previous research has only analyzed the preference amongst CBT and medication for treatment of depression. However, there has been some research on whether or not patients would consider exercise for treating depression, but no study has looked at exercise as a preference in relation to CBT and medications. In this study, I hypothesized that when individuals are given the option of

exercise with CBT and medication for treatment of depression, individuals will prefer exercise over medications for treatment.

Methods

Participants. Participants consisted of 389 (237 females and 152 males) individuals recruited through Amazon's Mechanical Turk (MTurk). Participant's ranged in age from 19 to 76 ($M = 37.50$, $SD = 13.54$). The racial breakdown of participants included: White/Caucasian – Non Hispanic (75.6%), African American or Black (6.9%), Hispanic or Latino (6.4%), Asian (6.9%), American Indian or Alaska Native (0.8%), more than one race (3.1%), and other race not listed (0.3%). Participants that completed the survey were compensated with 40 cents.

Procedure. Participants were recruited through MTurk with a link that provided them the opportunity to complete a survey about their "treatment preferences" in exchange for 40 cents of compensation. Participants who clicked on the link were directed to a Qualtrics survey containing an informed consent page. Those who agreed to the terms of the consent form were presented with the following scenario:

"Imagine that you are 25 years old and have been experiencing intense sadness for the past month. During that time, you have not been interested in activities that you typically enjoy, and you feel hopeless about things improving in the future. You have low energy, and just getting out of bed seems to be an exhausting task. You have been eating and sleeping more than usual, but you are still tired all the time. You feel worthless and have even begun to think that your family might be better off if you were dead. Due to your difficulties, you have stopped interacting with friends and family, and you have missed several days of work. Your friends and family are becoming increasingly frustrated with your lack of contact, and your boss told you that if you miss any more time at work, you

will be fired. You recently decided that you do not want to live this way anymore, and you made an appointment to seek help. At your appointment, your concerns are reviewed, and you are informed that you meet criteria for Major Depressive Disorder. You are presented with the following treatment options.”

Participants were then presented with three treatment options in randomized order: cognitive behavioral therapy, Sertraline, and physical exercise. Participants were asked to rate the likelihood that they would select each treatment option on a three-point scale (would not select, would possibly select, would definitely select) and to identify the treatment they would select if they could choose one of the listed treatment options. Upon completing the survey, participants were provided with a survey completion code, which they were required to enter into the MTurk site to receive their compensation.

Results

A series of paired-samples t-tests were conducted to compare the likelihood participants would select each of the three treatment options (exercise, cognitive behavioral therapy, or sertraline) for major depressive disorder. In this analysis, participants' selections were not mutually exclusive as they were permitted to select as many of the treatment options as they preferred. As seen in Figure 1, results indicated that participants were significantly more likely to select cognitive behavioral therapy ($M = 2.41$, $SD = 0.71$) than exercise ($M = 2.29$, $SD = 0.62$; $t(372) = -2.76$, $p = 0.006$) and sertraline ($M = 1.88$, $SD = 0.70$; $t(372) = 10.99$, $p < 0.001$) for the treatment of major depressive disorder. In addition, participants were significantly more likely to select exercise than sertraline, $t(372) = 7.57$, $p < 0.001$. As seen in Figure 2, when asked to select their preferred treatment method of only able to choose one, participants most frequently selected cognitive behavior therapy (44%), followed by exercise (32%) and Sertraline (24%).

Discussion

The present study examined the treatment preferences for cognitive behavioral therapy, exercise, and sertraline for major depressive disorder. Previous research has suggested that individuals generally report preferring cognitive behavioral therapy to psychiatric medications at a rate of approximately three to one. Results of the present study indicated that, when physical exercise is presented as a treatment option in addition to cognitive-behavioral therapy and psychiatric medication, cognitive behavioral therapy continues to be preferred at a significantly higher rate than medication, with medication continuing to be preferred by only approximately 25 percent of the sample. Notably, physical exercise was also perceived as significantly more preferable than pharmacological intervention, though exercise was less preferable than cognitive behavioral therapy.

The results of the present study are consistent with recent research indicating that when participants or patients are given the option of choosing cognitive behavioral therapy or medication, they are significantly more likely to choose cognitive behavioral therapy than medication at a rate of approximately three to one (Deacon & Abramowitz, 2005). Interestingly, when exercise was added to the mixture of choices, approximately 24 percent of participants selected medication, which is highly consistent with the rates observed in previous research. However, the rate of those who preferred cognitive behavioral therapy was only 44 percent, with an additional 32 percent selecting exercise. Thus, when compared to previous research, it appears that adding the option of exercise as an intervention for depression leads approximately 42 percent of those who would otherwise have selected cognitive behavior therapy to select exercise as an intervention instead. These results may indicate that individuals are seeking treatment that is convenient and cost effective, while both cognitive behavioral therapy and medications have a

high cost investment. Also, individuals who have previously preferred cognitive behavioral therapy may not have known exercise was another treatment option, and they would rather prefer a treatment that is more convenient for their time schedule.

Across literature, cognitive behavioral therapy has been preferred over antidepressant medication for treating major depression (McHugh, Whitton, Peckham, Weldge, & Otto, 2013). The preference for cognitive behavioral therapy emphasizes the need for physicians to improve their patients' access to evidence-based treatments. When individuals are given the option of having a choice in the treatment they prefer, the majority are leaning more towards psychological treatments, which is notable in that it suggests that evidence-based treatment is crucial in the primary-care setting. Masic, Miokovic, & Muhamedagic (2008) suggest that there may be a gap between research and practice where doctors are not staying on top of new research for treatments. This may account for physicians providing patients with the lack of treatment options, where the physicians may be deciding the best treatment option for the patient. Thus, the patient may be prescribed antidepressant medication. Evidence-based practice would allow the individual to weigh out their options based on previous research and decide for themselves what they think would be the most effective treatment.

The option for patients to choose the treatment they prefer may also elicit more effective outcomes (Swift & Callahan, 2009). A systematic review of the literature provided evidence that when patients are given the option of choosing the treatment they prefer, the patients were less likely to drop-out of the trial, and they were more likely to see positive results. However, even though patient preference allows for positive outcomes, the patient may not know the effectiveness of the treatment without consulting with their physician (Swift & Callahan, 2009). This may indicate that patient preference alone is not helpful, but if physicians would provide

their patients with evidence-based treatment options, then the patient may be able to choose the treatment option best suited for them.

Previous research has only investigated whether or not people would be willing to try exercise for a treatment of major depression disorder. For instance, Busch and colleagues (2016) examined the preference of exercise on an online survey. The researchers found that 61.8% of the participants said they were willing to try exercise as a treatment. However, the researchers did not compare exercise with other treatment options such as cognitive behavioral therapy and medication. The current study looked at the comparison between the three types of treatments and found exercise to be preferred over medication.

There are several limitations of the present study that should be noted. First, the current study may not generalize to an actual primary care setting. The participants in this study were not seeking help while patients in a primary care setting would be. Patients who are seeking help may perceive the treatment options differently, or they may not be given treatment options by their primary care physician. Therefore, even though the participants are claiming they would prefer cognitive behavioral therapy over medication, patients may not know they have options. This may be occurring because primary-care physicians are prescribing antidepressant medication to patients who are not aware of evidence-based treatments that may work better which includes cognitive-behavioral therapy (Smith, 2012). Second, while participants were given the option of whether or not they would choose a specific treatment, they were not given the option of choosing a combination of two treatments in the same time period. Findings may have differed if participants were specifically asked to choose a combination of each treatment. Third, there could have been treatment biases for participants who were currently or previously

treated for major depressive disorder. Being treated for major depression could have influenced the treatment preferred by participants, on the basis of which treatment they used.

References

- Babiyak, M., Blumenthal, J., Herman, S., Khatri, P., Doraiswamy, M., Moore, K., Craighead, E., Baldewicz, T., & Krishnan, K., (2000). Exercise treatment for major depression: Maintenance of therapeutic benefit at 10 months. *Psychosomatic Medicine*, *62*, 633-638. doi: 10.1097/00006842-200009000-00006
- Breslau, J., Miller, E., Jin, R., Sampson, N., Alonso, J., Andrade, L., Bromet, E., de Girolamo, G., Demyttenaere, K., Fayyad, J., Fukao, A., Galaon, M., Gureje, O., Hinkov, H., Hu, C., Kovess-Masfety, V., Matschinger, H., Medina-Mora, M., Ormel, J., Posada-Villa, J., Sagar, R., Scott, K., & Kessler, R., (2011). A multinational study of mental disorders, marriage, and divorce. *Acta Psychiatrica Scandinavica*, *124*, 474-486. doi: 10.1111/j.1600-0447.2011.01712.x
- Busch, A., Ciccolo, J., Puspitasari, A., Nosrat, S., Whitworth, J., & Stults-Kolehmainen, M., (2016). Preferences for exercise as a treatment for depression. *Mental Health Phys Act*, *10*, 68-72. doi:10.1016/j.mhpa.2015.12.004.
- Churchill, R., Khaira, M., Gretton, V., Chilvers, C., Dewey, M., Duggan, C., & Lee, A., (2000). Treating depression in general practice: factors affecting patients' treatment preferences. *British Journal of General Practice*, *50*, 905-906. PMID: PMC1313855
- Dwight-Johnson, M., Sherbourne, C., Liao, D., & Wells, K., (2000). Treatment preferences among depressed primary care patients. *Journal of General Internal Medicine*, *15*, 527-534. doi:10.1046/j.1525-1497.2000.08035.x
- Deacon, B., & Abramowitz, J., (2005). Patients' perceptions for pharmacological and cognitive-behavioral treatments for anxiety disorders. *Behavior Therapy*, *36*, 139-145. doi: 10.1016/S0005-7894(05)80062-0

- Facts & statistics. (2016, August). *Anxiety and Depression Association of America*. Retrieved from www.adaa.org.
- Fournier, J., DeRubeis, R., Hollon, S., Dimidjian, S., Amsterdam, J., Shelton, R., & Fawcett, J., (2010). Antidepressant drug effects and depression severity: A patient-level meta-analysis. *JAMA*, *303*, 47-53. doi:10.1001/jama.2009.1943
- Gaffan, E., Tsaousis, L., & Kemp-Wheeler, S., (1996). Researcher allegiance and meta-analysis: The case of cognitive behavior therapy for depression. *Journal of Consulting and Clinical Psychology*, *63*, 966-980. doi:10.1037//0022-006X.63.6.966
- Gonda, X., Pompili, M., Serafini, G., Carvalho, A., Rihmer, Z., & Dome, P., (2015). The role of cognitive dysfunction in the symptoms and remission from depression. *Annals of General Psychiatry*, *14*, 27, doi:10.1186/s12991-015-0068-9.
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H., (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research*, *57*, 35-43. doi: 10.1111/j.2042-7166.2003.tb04008.x
- Holtzheimer, P., & Mayberg, H., (2011). Stuck in a rut: Rethinking depression and its treatment. *Trends in Neuroscience*, *34*, 1-9. doi: 10.1016/j.tins.2010.10.004
- Keller, M.B., (1994). Depression: a long-term illness. *The British Journal of Psychiatry*, *29*, 9-15.
- Kessler, R., (2012). The costs of depression. *Psychiatric Clinics of North America*, *35*, 1-14. doi: 10.1016/j.psc.2011.11.005
- Khan, A., Fawcett, J., Lichtenberg, P., Kirsch, I., & Brown, W., (2012). A systematic review of comparative efficacy of treatments and controls for depression. *Public Library of Science* *7*, e41778. doi: 10.1371/journal.pone.0041778

- Kwan, B., Dimidjian, S., & Rizvi, S., (2010). Treatment preference, engagement, and clinical improvement in pharmacotherapy versus psychotherapy for depression. *Behavior Research and Therapy*, 48, 799-804. doi: 10.1016/j.brat.2010.04.003
- Lawlor, D., (2001). The effectiveness of exercise as an intervention in the management of depression: systematic review and meta-regression analysis of randomized controlled trials. *BJM*, 322, 736. doi: <https://doi.org/10.1136/bmj.322.7289.763>.
- Masic, I., Miokovic, M., & Muhamedagic, B., (2008). Evidence based medicine – new approaches and challenges. *Journal of Academy of Medical Sciences of Bosnia and Herzegovina*, 16, 219-225. doi: 10.5455/aim.2008.16.219-225
- McHugh, K., Whitton, S., Peckham, A., Weldge, J., & Otto, M., (2013). Patient preference for psychological vs. pharmacological treatment of psychiatric disorders: A meta-analysis review. *The Journal of Clinical Psychiatry*, 74, 595-602. doi: 10.4088/JCP.12r07757
- Mead, G., Morley, W., Campbell, P., Greig, C., McMurdo, M., & Lawlor, D., (2009). Exercise for depression. *Cochrane Database of Systematic Reviews*, 3, doi:10.1002/14651858.CD004366.pub4
- Nahas, R., & Sheikh, O., (2011). Complementary and alternative medicine for the treatment of major depressive disorder. *Canadian Family Physician*, 13, 659-663. PMID: PMC3114664
- Peterson, C., Becker, C., Treasure, J., Shafran, R., & Bryant-Waugh, R., (2016). The three-legged stool of evidence-based practice in eating disorder treatment: research, clinical, and patient perspective. *BMC Medicine*, 14, 69, doi: 10.1186/s12916-016-0615-5.
- Pilkington, K., Kirkwood, G., Rampes, H., & Richardson, J., (2005). Yoga for depression: the research evidence. *Journal of Affective Disorders*, 89, 13-24. doi: 10.1016/j.jad.2005.08.013

- PubMed Health, (2017). Depression: How effective are antidepressants? *U.S. National Library of Medicine*. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0087089/>.
- Raue, P., Weinberger, M., Sirey, J., Meyers, B., & Bruce, M., (2011). Depression treatment preferences in home healthcare. *Psychiatric Service, 62*, 532-537.
doi:10.1176/appi.ps.62.5.532
- Sackett, D., Rosenberg, W., Gray, J., Haynes, R., & Richardson, W., (1996). Evidence based medicine: what is it and what it isn't. *BMJ, 312*, 71-72. doi:
<https://doi.org/10.1136/bmj.312.7023.71>
- Saeed, S., Antonacci, D., & Bloch, R., (2010). Exercise, yoga, and meditation for depressive and anxiety disorders. *American Family Physician, 81*, 981-986.
- Simon, G., VonKorff, M., & Barlow, W., (1995). Health care costs of primary care patients with recognized depression. *Archives of General Psychology, 52*, 850-856.
doi:10.1001/archpsyc.1995.03950220060012
- Singh, N., Clements, K., & Fiatarone, M., (1997). A randomized controlled trial of progressive resistance training in depressed elders. *Journal of Gerontology: Medical Sciences, 52*, 27-35. doi: 10.1093/gerona/52A.1.M27
- Smith, B., (2012). Inappropriate prescribing. *Monitor, 43*, 36.
- Swift, J., & Callahan, J., (2009). The impact of client treatment preference on outcome: A meta-analysis. *Journal of Clinical Psychology, 65*, 368-381. doi: 10.1002/jclp.20553

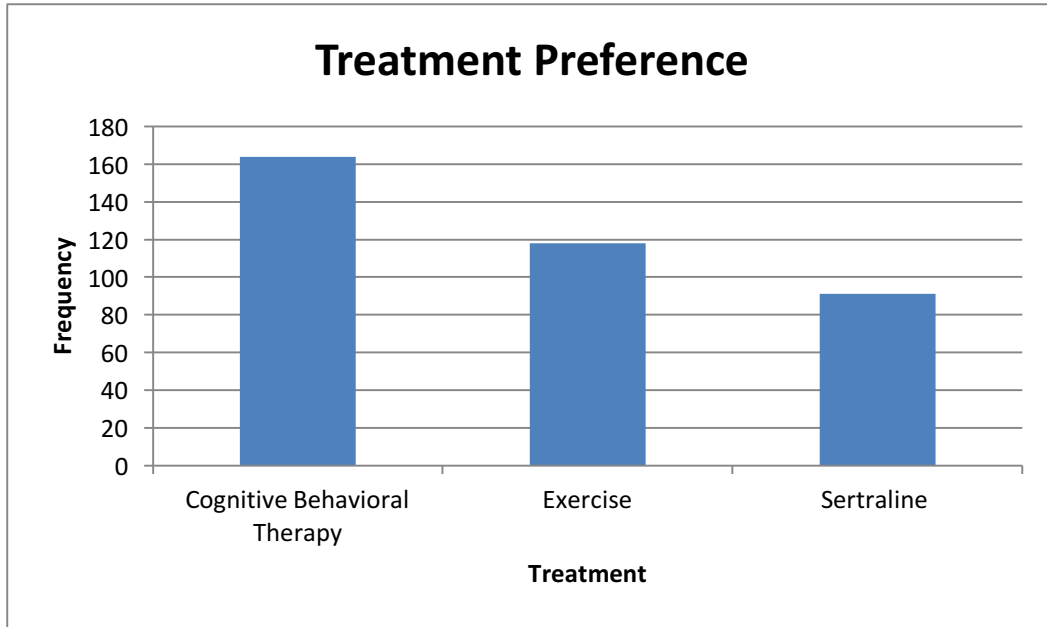


Figure 1. Treatment preference for CBT, exercise, and Sertraline for major depressive disorder.

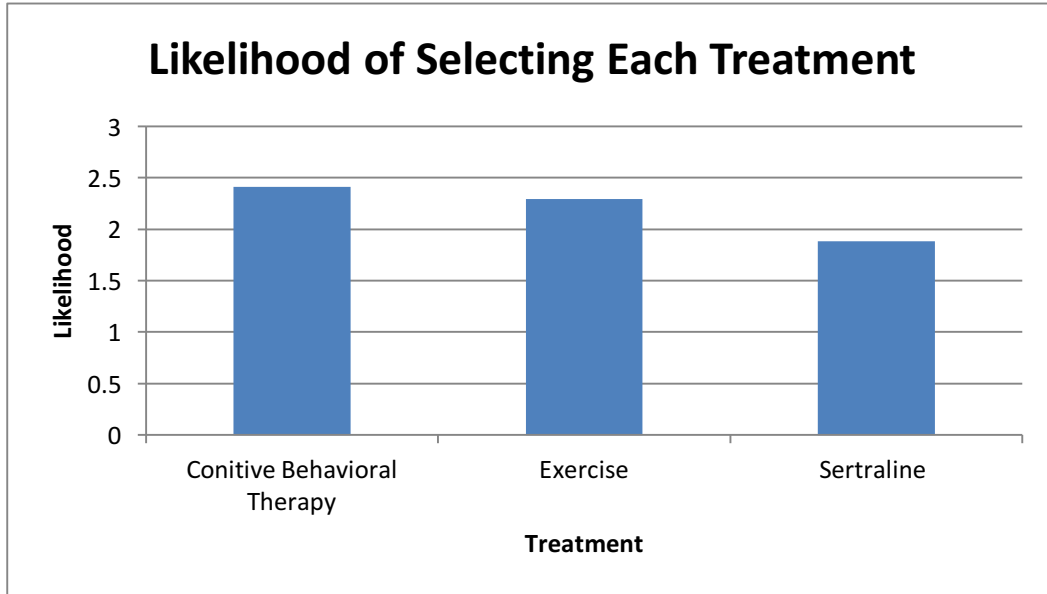


Figure 2. Likelihood of selecting CBT, exercise or Sertraline for major depressive disorder.