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Utilizing Mindfulness-Based Exercises to Reduce Anxiety Severity Scores According to the GAD-7

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in partial fulfillment of the requirements for the degree
Doctor of Nursing Practice with an emphasis in Psychiatric-Mental Health Nurse
Practitioner

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Abstract

Problem: Generalized anxiety disorder (GAD) affects thousands of Americans every year. Mindfulness, a practice of bringing oneself into the present moment, has been shown to impact anxiety symptoms positively.

Objective: This prospective observational correlational study utilized mindfulness-based exercises to help decrease anxiety severity according to the generalized anxiety disorder-7 (GAD-7) in an outpatient psychiatric practice.

Methods: Participants practiced mindfulness exercises for two months. The GAD-7 was completed three times to monitor symptom severity. Two participant satisfaction surveys were completed to determine whether participants felt the exercises were beneficial for decreasing their anxiety.

Results: A repeated measures ANOVA was used to analyze within factor variables of the GAD-7 and showed a p -value 0.009. A second repeated measures ANOVA was performed for each combination of the GAD-7 scores and revealed statistical significance between the first and second GAD-7 with a p -value of 0.020.

Implications for Practice: Results from the satisfaction survey showed all participants felt the exercises were beneficial in managing their anxiety and would continue to practice in the future. Providers can feel confident in recommending these quick, cost effective exercises for patients with a GAD diagnosis.

Introduction

Anxiety disorders are the most common mental illness in the United States, affecting approximately 19.1% of the total adult population (National Alliance on Mental Illness [NAMI], 2017). The Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) acknowledges different subcategories of anxiety-related conditions under the broader category of anxiety disorders. One of the more common anxiety-related conditions listed in the DSM-5 is generalized anxiety disorder (GAD). In addition to causing intense feelings of worry, GAD can interfere with a person's functioning, personal relationships, and the overall state of wellbeing (Mayo Clinic, 2018). The current recommended first-line treatment for GAD is a combination of pharmacotherapy and psychotherapy (Locke, Kirst, & Schultz, 2015).

Purpose of Project

The purpose of this quality improvement project was to determine if mindfulness exercises added to current treatment decreased GAD symptoms of patients in an outpatient psychiatric clinic.

Project Aims

1. 25% of interested patients will agree to participate in the project
2. Ensure 100% of participants without a generalized anxiety disorder (GAD) who screen positive on the GAD-7 follow-up with their provider
3. Achieve a 50% decrease in score on the GAD-7 at the one- and two-month mark

Study Question

Among patients in an outpatient psychiatric clinic who screen positive for mild to severe levels of anxiety based on the GAD-7, will the combination mindfulness-based

exercises along with their current treatment be more effective than their current treatment alone in decreasing severity of GAD symptoms over two months?

Review of the Literature

GAD-7

A search was conducted to identify if the GAD-7 was a reliable tool in both the diagnosis and ability to track anxiety severity. A search was conducted on CINAHL utilizing the keywords “generalized anxiety disorder” and “GAD-7”. Publication date was limited to 2014-2019 and 129 results were obtained.

In 2006, a brief, self-reported tool, based off of GAD diagnostic criteria in the DSM, was created to both screen for the presence of GAD and identify anxiety severity. A score of five, ten, and 15 were the cutoff points for mild, moderate, and severe anxiety with a score of less than five considered minimal. The validation of this tool involved a cross-sectional study from November 2004 through June 2005 and included 2,740 adult participants in 15 primary care clinics in the United States (Spitzer et al., 2006). Results of this study determined the GAD-7 was a sound screening tool for identifying GAD as well as measuring anxiety severity, with an 89% sensitivity with an 82% specificity (Spitzer et al., 2006).

Kertz, Bigda-Peyton, and Bjorgvinsson (2013) conducted a study of 232 inpatients at a New England psychiatric hospital seeking a way to better diagnose anxiety disorders. Utilizing the GAD-7, researchers found the GAD-7 was good for measuring symptoms in acutely symptomatic population but was not as good at identifying a diagnosis of GAD (Kertz et al., 2013). This study supported the original hypothesis that the GAD-7 would have good internal consistency and would show good convergent

validity (Kertz et al., 2013). One important take away from this study was the identification of the GAD-7 as having significant strength at being sensitive to symptom changes overtime (Kertz et al., 2013).

A study conducted by Rutter and Brown (2017) evaluated the reliability of the GAD-7 in identifying the presence of GAD as well as measuring severity. The results of this study identified that the GAD-7 was better at identifying the presence of increased distress and negative affect (Rutter & Brown, 2017).

Mindfulness-Based Interventions

A search conducted on CINAHL using keywords “mindfulness” AND anxiety disorders or anxiety or generalized anxiety disorder and publication date criteria of 2014 to 2019 produced 99 results. Mindfulness is a practice that focuses on bringing oneself into the present moment without judging emotions. The practice of mindfulness ranges from formal programs to quick exercises completed at home.

A comprehensive meta-analysis of 142 randomized control trials with 12,005 participants conducted by Goldberg et al. (2018) sought to identify how effective mindfulness-based interventions (MBIs) would be compared to other interventions or no intervention on the symptoms of specific psychiatric disorders. The results of this study, which examined mindfulness practice in both real-time and at home, showed the use of MBI was superior to no intervention but equivalent to other evidence-based treatments. (Goldberg et al., 2018).

A second article was identified by Hoffman, Sawyer, Witt, and Oh (2010) who conducted a literature search of 39 studies that focused on mindfulness interventions in relation to anxiety and depression. There were 1,140 total participants in the selected

studies, all of whom were receiving mindfulness interventions for a variety of reasons, including GAD (Hoffman et al., 2010). Results from this study showed MBI moderately helped improve symptoms of anxiety and had a positive result for mood disorders.

Researchers discovered these interventions are not necessarily better implicated for one diagnosis over another, but rather for targeting specific symptoms (Hoffman et al., 2010).

Researchers of a third study acknowledged how people who have anxiety disorders are often unable to adequately live in the present moment, but how mindfulness can help guide patients towards self-acceptance and self-love through consciously focused attention (Stephen et al., 2018). An observational study of 52 patients with GAD in seven different countries were asked to answer a 10-question questionnaire with a zero to three scale, zero being no anxiety to three being daily feelings of anxiety. A score of at least one was required to participate in the study.

Participants who screened positive agreed to practice mindfulness exercises 20-25 minutes per day, five days a week for eight weeks. Based on the post-intervention scores, researchers affirmed anxiety levels had decreased through mindfulness practice and remained low at the study's conclusion. One limitation was a potential placebo effect after participants reported they expected their anxiety levels to improve with the practice.

One final study by Krusche, Cyhlarova, & Williams (2013) examined how the GAD-7 would be impacted by participants who used a self-initiated online mindfulness practice completed three times a week for one month. The pre and post GAD-7 scores showed a statistical significance with a p -value of <0.001 . One note from this study is the longer an online module took for the participant to complete, the less likely they were to practice it.

Method

Design, Setting, & Sample

This quality improvement project was conducted as a prospective observational correlational study and focused on reducing anxiety severity through the use of mindfulness-based exercises at a psychiatric practice in a suburban area of a large Midwestern state. The patients of one specific psychiatric-mental health nurse practitioner (PMHNP) were recruited using a voluntary response sample. Participants were required to meet the inclusion criteria of being at least 18 years of age, able to read English, and have an in-office appointment at the time of the screening. They also needed to have the ability to comprehend simple written instructions and score a minimum of five according to the GAD-7. Participants were excluded if they were younger than 18 years of age, unable to read English, or unable to follow simple written instructions. Participants with a score of less than five on the GAD-7 were excluded.

Approval, Data Collection, & Analysis

Approval for this project was granted by the institutional review board (IRB) at the University of Missouri-St. Louis and the owner of the clinic where project was implemented. The GAD-7(Appendix A) administered at beginning of the project and at the one- and two-month points and the participant satisfaction survey, (Appendix B) given at one and two months, were the sources of data collection and analysis. Age, race, gender identity, and a previous diagnosis were obtained from each participant's electronic health record (EHR).

Procedure

Data collection lasted from January 7, 2020 until January 30, 2020 at the nurse practitioner's office within the clinic. The PMHNP identified patients that might benefit from participating and informed them about the project after their appointment. Patients who were interested in participating then approached the principal investigator (PI), who was in a separate, private room to ensure confidentiality, for more information. Potential participants were informed that a project utilizing mindfulness-based exercises to reduce anxiety was going to be conducted as a doctoral project and that a tool known as the GAD-7 was going to be utilized to measure their anxiety severity. It was explained at the time of their consent that if their score measurements were in the range for the project they would be given the GAD-7 again at the one-and-two-month mark. Those who were in agreement signed the informed consent, and were given the GAD-7 to complete (see Appendix A). Scores for the GAD-7 were determined by the investigator. Participants who did not meet the score of five were thanked and departed. Participants who met the score of five on the initial GAD-7 were given brief instruction on how to perform the mindfulness-based exercises along with a brochure containing the demonstrated exercises to practice on their own (see Appendix C). Participants were given a copy of the consents. All of the informed consents were kept in a secure, locked location. The names and e-mail addresses of the consented participants were assigned a reference number and placed into a computer document kept on the PI's password-protected computer. The age, race, gender identity, previous diagnosis of GAD and GAD-7 scores were kept on a separate document on the PI's password-protected computer (see Appendix D).

After completing the GAD-7, an exercise demonstration and brochure were given to each participant along with the PI's e-mail for additional questions. Participants were encouraged to practice the exercises as often as they would like but were not given a specific number of days or length of time they were expected to practice the exercises.

A reminder e-mail was sent out to the participants every two weeks, encouraging them to continue practicing the exercises. The follow-up GAD-7 and patient satisfaction surveys were sent out through *Qualtrics*. Participants who did not fill out their follow-up surveys within one week were sent a reminder e-mail.

Results

The total number of participants who completed all three GAD-7 surveys was 13, with 84.62% identifying as female and 15.38% identifying as male. The breakdown of race had 100% of participants identifying as Caucasian. The ages of the participants ranged from 19 to 57, with an average age of 33.54. 100% of the participants had a previous GAD diagnosis so no provider follow-up was needed to evaluate for a new GAD diagnosis.

The mean scores on the pre, second, and third GAD-7 can be found in Table 1. A repeated measure analysis of variance (ANOVA) was utilized to analyze the results of the pre, one-month, and two-month GAD-7 based on an alpha of 0.05 and showed statistical significance (see Table 2). The marginal means contrasts for each combination of within-subject variables for the repeated measures ANOVA was also statistically significant for the pre and second GAD-7 (see Table 3). The impact of anxiety on daily activities and relationships at the pre, one, and two-month mark can be found in Table 4. The groupings

for anxiety severity into the minimal, mild, moderate, and severe categories over the two-month time frame can be seen in Figure 1.

To see if there was a correlation on the patient satisfaction survey between the number of times the exercises were performed and how helpful participants felt the exercises were, a Spearman correlation analysis was performed. There was statistical significance between the frequency of exercise practice and how helpful the participants felt the exercises were at the two-month mark, with a p -value of 0.012.

An analysis of the participant satisfaction survey was also performed. The questions on the satisfaction survey included how many times a week the participant practiced the exercises, how helpful they felt the exercises were on their anxiety, if they used any other source besides the brochure, and if they planned to continue practicing mindfulness in the future (Figures 2, 3, & 4). Every participant in this project reported they would continue to practice mindfulness-based exercises in the future.

Discussion

The results from the first to the second GAD-7 show statistical significance for a decrease in overall anxiety score. An increase in the GAD-7 scores at the end of the second month may be related to the stress of COVID-19 pandemic. The last GAD-7 was sent around the same time the COVID-19 outbreak was increasing in the United States, with some participants commenting on their satisfaction survey that it was difficult to focus on the exercises with this unforeseen stressor. Not requiring participants to practice the exercises for a certain number of days or length of time also likely decreased adherence rates which would not have provided participants with the maximal potential benefit of the exercises.

Improved results from the first to second GAD-7 could be related to medication changes made during the participant's appointment. While this study did not look directly at a correlation between medication changes, mindfulness, practice and improvement in the GAD-7 this does not discount the fact mindfulness practice may be beneficial to overall anxiety severity as evidenced by the fact of all participants feeling the exercises were beneficial for the anxiety symptoms.

There are several recommendations for future studies. Future studies may choose to establish a set number of days a week or amount of time to practice as a way to increase adherence rates and further decrease anxiety severity. The use of more frequent reminders to practice the exercises is also suggested. A larger variety of exercises to practice could be provided to the participants through the use of mobile phone applications, pre-recorded videos, or holding in-person classes. The participation satisfaction survey question related to exercise benefit would reveal more useful data as a Likert-scale rating.

Conclusion

Generalized anxiety disorder is a life-altering disorder that can wreak havoc on every aspect of a person's life. While medication and cognitive behavioral therapy are the first-line measures in treating this disorder, patients benefit from supplemental recommendations to further decrease anxiety severity. Mindfulness has been proven to bring those who practice it into the present moment. The practice of mindfulness, which has been proven to decrease anxiety and bring peace of mind, can be confidently recommended by health care providers for the patients entrusted to their care.

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Appendix A

GAD-7

Name: _____

GAD-7				
Over the last 2 weeks, how often have you been bothered by the following problems?	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

Total Score _____ = Add Columns _____ + _____ + _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix B

Pat Survey

Please circle one of the following:

1. How often did you utilize the mindfulness-based exercises listed in the brochure?

Circle one:

Not at all Once a week Twice a week
 Three times a week Four or more times a week

2. Do you feel these exercises were helpful?

Not at all Somewhat helpful Very helpful

3. If you answered yes to the question above, please briefly comment in the space below on how these exercises were helpful for you.

4. Will you continue to practice these exercises in the future?

Yes No

5. Did you utilize other sources, beside the brochure, to practice mindfulness?

Videos Mobil Phone Apps Books

Other (please specify)

6. Please provide any other comments you have in the space below:

Appendix C

Mindfulness-based exercises brochure

5 Senses Grounding Technique


When you begin to feel anxious, identify:

- 5 things you can see
- 4 things you can touch
- 3 things you can hear
- 2 things you can smell
- 1 thing you can taste

Muscle Relaxation

- While seated, begin by tensing the muscles in your feet while you slowly breathe in through your nose. Hold your breath for 5 seconds and relax your muscles during the exhale.
- Next, tense the muscles in your legs while slowly breathing in through your nose. Hold your breath for five seconds then relax your muscles during the exhale.
- Continue working up your body to muscle groups such as the abdomen, hands, arms, and facial muscles, repeating the slow breath in, holding your breath of 5 seconds, and then relaxing the muscles as you exhale.

Quick Mindfulness Based Exercises



“Mindfulness is a practice which focuses on bringing oneself into the present moment.”

Deep breathing exercise

- This can be performed sitting or standing
- Begin with a deep breath in through your nose, feeling your ribcage, chest, and abdomen filling with air
- Hold your breath for three to five seconds
- Slowly exhale through your mouth, feeling the muscles in your ribcage, chest and abdomen relaxing.
- Repeat

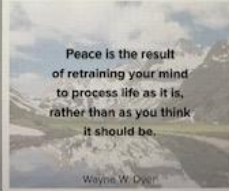
Mental Focus Exercise

- Select an object to focus on
- Remain focused on this object for as long as possible
- If your mind begins to drift, acknowledge the thought but then refocus on the object

Body Scan

- This exercise makes you aware of the physical sensations your body is experiencing
- Begin by slowly acknowledging any sensation in your feet, such as warmth, pressure, clothing, etc.
- Continue moving slowly up your body, acknowledging similar sensations for areas like legs, abdomen, arms, neck, and face.
- Once you reach your face, you may scan back down your body or complete the exercise.

Questions? Email me at keccnc@mail.umsl.edu



Peace is the result of retraining your mind to process life as it is, rather than as you think it should be.
— Wayne Dyer

Appendix D

Data Log

Reference #	Age	Race	Gender Identity	Date of 1 st GAD-7 and Score	Date of 2 nd GAD-7 and Score	Date of 3 rd GAD-7 and Score

Table 1

Summary Statistics Table for Pre, 2nd, and 3rd GAD-7

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	<i>SE_M</i>	Min	Max	Skewness	Kurtosis
GAD-7 Pre	12.08	4.37	13	1.21	6.00	19.00	0.13	-1.18
GAD-7 2 nd	8.31	3.52	13	0.98	4.00	14.00	0.64	-1.11
GAD-7 3 rd	8.15	4.62	13	1.28	2.00	16.00	0.15	-1.32

Note. *n* = 13.

Table 2*Repeated Measures ANOVA Results*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η_p^2
Within-Subjects						
Within Factor	2	128.36	64.18	5.74	.009	0.32

Table 3

The Marginal Means Contrasts for each Combination of Within-Subject Variables for the Repeated Measures ANOVA

Contrast	Difference	SE	df	t	p
GAD-7 Pre – GAD-7 2 nd	3.77	1.19	12	3.17	.020
GAD-7 Pre – GAD-7 3 rd	3.92	1.53	12	2.57	.060
GAD-7 2 nd – GAD-7 3 rd	0.15	1.19	12	0.13	.991

Note. In order to calculate the difference between the estimated marginal means, Tukey Comparisons were used.

Table 4
Frequency Table for How Difficult Anxiety Made Daily Activities and Relationships

Variable	<i>n</i>	%
Difficulty-Pre		
Somewhat difficult	7	53.85
Very Difficult	4	30.77
Extremely difficult	2	15.38
Difficulty 2 nd		
Somewhat difficult	9	69.23
Very difficult	3	23.08
Extremely difficult	1	7.69
Difficulty 3 rd		
Not Difficult	1	7.69
Somewhat difficult	7	53.85
Very difficult	4	30.77
Extremely difficult	1	7.69

Figure 1

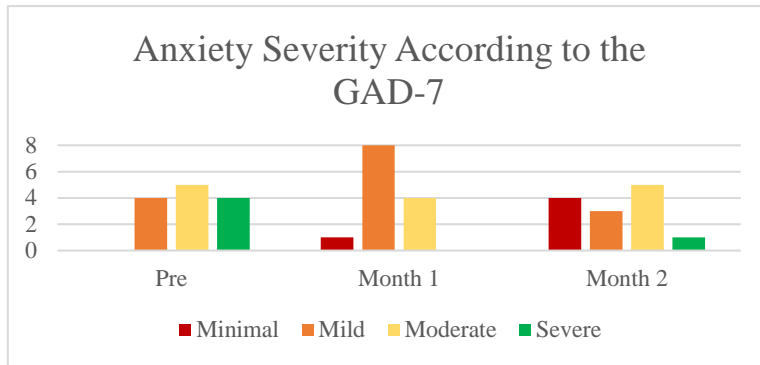


Figure 2

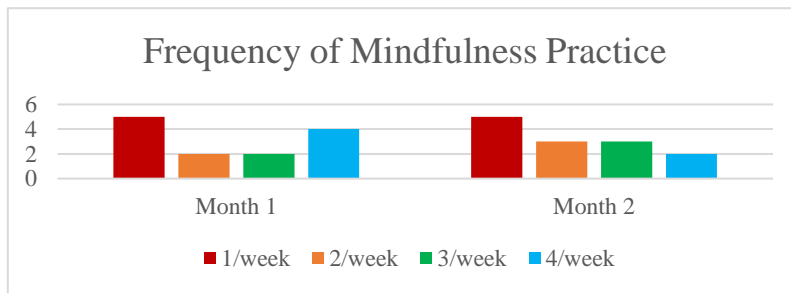
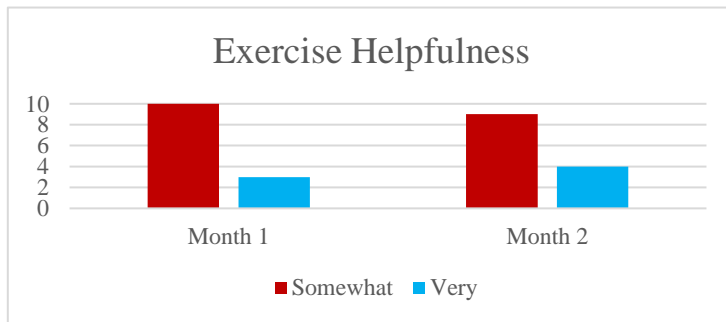


Figure 3



Note. No participants reported the exercises as not helpful for their anxiety symptoms.

Figure 4.

