

**Decreasing Anxiety Levels and use of Antianxiety Medication in the Behavioral Health**

**Inpatient Setting**

by

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### Abstract

*Problem:* Reducing the anxiety of patients on an adult inpatient psychiatric unit can be challenging. Prescribed benzodiazepines are the primary medication of choice in reducing anxiety. In 2013, approximately 31% of fatal overdoses involved benzodiazepines in United States. Approximately 70% of the patients admitted to a 16-bed inpatient psychiatry unit in the mid-Atlantic are prescribed anti-anxiety medications to include benzodiazepines. Patients with high levels of anxiety tend to request pro re nata (PRN) anti-anxiety medications 2-3x more than patients that do not request for PRN anti-anxiety medication.

*Purpose:* This quality improvement (QI) project aimed to implement mindfulness education techniques and resources to reduce the use of PRN anti-anxiety medications.

*Methods:* This project was implemented over 14 weeks from October-January 2022. A mindfulness education module for staff was developed to ensure that all necessary documentation (e.g., Dynamic Appraisal of Situational Aggression (DASA), mood rating, group therapy attendance, and Mindfulness iPad usage) were conducted and documented in the electronic health record (EHR). Social work introduced and reinforced mindfulness techniques in group therapy. Patients' attendance is documented in their EHR every shift. Nurses assessed DASA scores, mood ratings and usage of Mindfulness iPad in the EHR. Once a week team project lead audits EHR charting and collects data on the usage of anti-anxiety medication in addition to the documentation.

*Results:* The data reflects 20% utilization of the Mindfulness iPad by nursing staff, and no appreciable reduction in PRN anti-anxiety medication. Analysis of the data's mindfulness group attendance component reflects a sustained rate of group attendance at 85%.

*Conclusions:* Project implementation was met with many challenges including the acuity of the unit and the introduction of new technology. A continuous education plan and a user-friendly mindfulness application is recommended.

### **Decreasing Anxiety Levels in a Behavioral Health Inpatient Setting**

According to the World Health Organization (WHO) (2015), it is estimated more than 68 million people are suffering from an anxiety disorder. Anxiety Disorders are characterized by feelings of anxiety and fear. These disorders include Generalized Anxiety Disorder (GAD), Panic Disorder (PD), phobias, social anxiety disorder (SAD), obsessive-compulsive disorder (OCD), and post-traumatic stress disorder (PTSD). Anxiety is often an accompanying symptom of other mental health disorders that are not necessarily classified under anxiety disorders. Anxiety presents in many different forms, such as agitation, hypervigilance, aggression, and insomnia. According to the WHO, within the first year of the COVID-19 pandemic, there has been an increase in the global prevalence of anxiety by 25% (WHO, 2022). It is predicted that the increase in anxiety coincided with a disruption in people's everyday functioning including social isolation, job loss and changes, lack of social support, fear of infection, grief after bereavement, and financial worries. This disruption and anxiety have affected healthcare workers as well (WHO, 2022).

On the inpatient psychiatry unit, anxiety adds many challenges for staff and patients. Anxiety complicates treatment planning, reduces treatment adherence, interrupts healthy sleep patterns, and creates an unsafe work environment due to increased aggression/agitation (Walker et al., 2021). In-hospital improvement in symptoms may be partly due to overuse of psychotropic medication, such as anti-anxiety medication, rather than encouraging the development of effective coping mechanisms. Misinterpretation in the reduction in symptoms can have the potential for readmissions. Institutional policies may also introduce barriers regarding therapeutic approaches. In addition, staffing often lack the support, time, the educational and emotional resources to effectively manage a patient experiencing a behavioral response related to

anxiety (Dodd & Wellman, 2000). Baseline data from March 20<sup>th</sup> to March 23<sup>rd</sup> and from April 15<sup>th</sup> to April 19<sup>th</sup> was gathered from the current project site. The initial data collection revealed that as needed (PRN) medications for managing anxiety/agitation was used fifteen times while the second data collection period revealed an increase in use up to thirty-one times. The purpose of this quality improvement project was to implement mindfulness coping strategies to hospitalized psychiatric patients to reduce the use of PRN anti-anxiety medications.

### **Literature Review**

Mistler et al. (2017) measured the use of a mindfulness applications effectiveness in the reduction of anxiety and managing distressing symptoms on an acute psychiatric unit. A total of 12 patients enrolled in the study were diagnosed with either schizoaffective disorder (50%), bipolar disorder (25%) and schizophrenia (25%). Participants in the study were taught and instructed to use the mindfulness software for a period of one week. The mindfulness software's aim was to teach beginners the fundamental concepts of mindfulness through guided meditations. A survey conducted after the implementation of the mindfulness computer application (app) revealed that 75% (n=9) agreed the app made them feel less anxious while 17% (n=2) strongly agreed. A meta-analysis of randomized controlled trials aimed at examining the effectiveness of mindfulness via a smart phone application conducted by Linardon (2020), revealed smartphone applications that included mindfulness components resulted in a significantly higher level of mindfulness skills ( $g=0.29$ ). This finding suggests that principles of a mindfulness and self-compassion may be acquired through mental health smartphone applications. Huberty et al. (2021) concluded that the Calm ® mobile application resulted in clinically meaningful improvements in anxiety, with effects being largely driven by improvements in cognitive and somatic pre-sleep arousal. A unique pilot study, conducted by

Horner et al. (2014), aimed at evaluating mindfulness as a strategy to improve inpatient nurse and patient experiences support the effectiveness of brief mindfulness training to reduce stress levels of nursing staff and collectively, the stress levels on the unit. Clarke and Draper (2020) demonstrated in a meta-analysis of 88 randomized controlled studies with psychiatric patients that use of the mindfulness application, Calm ®, was associated with significant and tangible gains in wellbeing (Table 1 & Table 2). The proposed project provides a similar integrative approach. Patients will receive training on mindfulness techniques during their daily group therapy sessions with the social worker. These techniques will be reinforced with additional group sessions on an iPad with the mindfulness application, BetterSleep ®. Furthermore, the use of the Mindfulness iPad will be encouraged for patients who are beginning to experience anxiety, to reinforce the techniques learned in group therapy. The goal is to reduce the use of antianxiety medications. The proposed solution is to promote and reinforce the implementation of the mindfulness app. The reinforcement will consist of several core components: mindfulness nurse education, mindfulness group therapy, and the mindfulness app, BetterSleep ®, installed on the unit patient iPad. These components allow for a well-rounded approach to address a common ailment amongst this patient population, engage patients in self-management of care, and reinforce the hospital approach to managing patients in crisis. This quality improvement project aligns with the goals of the project site and could be curtailed for use throughout the hospital.

### **Theoretical Framework**

Implementation of a new intervention within a complex health system comes with many challenges. Implementing a quality improvement project can be time-consuming, met with resistance, and require a consistent effort from different key stakeholders. The implementation of a quality improvement project will only be successful with leadership's approval and full

assessment of available resources. Presenting evidence-based practice recommendations from a literature review helps to obtain the buy-in from leadership, summon innovation champions and gain provider participation. The Framework for Complex Implementation is a useful tool to illicit support from management to unlock resources otherwise difficult to obtain (e.g., iPad availability costs, BetterSleep ® application, and staff participation). The provider participation addresses the framework's distinguishable concept of shared perception of priority. Utilizing the charge nurses and social worker as innovation champions will help support the proposed plan. Innovation champions promote the innovation use while impacting the implementation climate (Helfrich et al., 2007). See Figure 1 for more details about this framework.

### **Methods**

The setting and unit culture for the implementation of the quality improvement project was assessed prior to implementation. The 16-bed adult behavioral health unit in a community hospital was the initial point of implementation for this quality improvement project. The patients on this unit had a variety of mental health diagnoses including Major Depressive Disorder, Bipolar Disorders, Schizoaffective Disorders and Generalized Anxiety Disorder with at least 75% of the patient population experiencing some form of anxiety-associated symptoms. Every patient admitted during the implementation phase was included in the study. The patients ranged in age from 18-90 years of age. The unit employs 12 registered nurses (RNs), two social workers, six mental health providers, eight behavioral health technicians, and the medical director. An assessment of the current process of care for a patient in distress was reviewed by the key stakeholders of this project to identify areas of improvement. After evaluating the best way to implement a practice change was discussed, it was determined that several practice

changes would have to occur via group therapy, mindfulness patient education, innovative mindfulness technology, and staff mindfulness training.

The site's approach to addressing a patient in distress consisted of administering as needed medication such as Lorazepam, Quetiapine and Zyprexa as the first line of treatment and re-medication for a recurrence of symptoms. See Figure 3 for current process map. Patients were often left to self-soothe as the medication took effect. In extreme cases, patients were given chemical restraints and/or physical restraints as a method to keep the milieu safe. Security was called and utilized to physically hold the patient while the nursing staff administers the chemical restraint and/or physical restraints. The unit was typically staffed with three to four nurses, one to two behavioral health technicians, three nurse practitioners and two psychiatrists on each shift. Two social workers were responsible for holding group therapy two to three times daily. At night, social workers were not available and one provider was designated for on-call. Through creation of a standardized, proactive approach to managing patient's acute anxiety, there could be a reduction in potential injury and restraint use while improving quality of care, maintain milieu safety, and protect the therapeutic alliance while teaching lifelong coping skills. The desired process proactively targeted inpatient anxiety through use of group therapy and nurse-guided mindfulness education and reinforcement. See Figure 4 for planned intervention. The structured goal was for 100% of staff to be educated on mindfulness education packet: basic mindfulness education and proper use of MindfulPad (Appendix A), a 30% reduction in PRN anti-anxiety medication usage, 80% usage of MindfulPad and 90% group attendance. This will be measured by weekly chart audits. See Figure 5 for audit tool.

Unit staff received mindfulness training in the form of an e-learning module. The e-learning module contained step-by-step instructions on how to access the MindfulPad. After the

e-learning module was completed, each staff member was able to assess and identify the level of distress a patient experienced and whether it warranted the use of a MindfulPad or the use of a pharmacological approach. The e-learning module also reinforced the annual hospital-required Crisis Prevention Management (CPM) training. Six designated unit iPads had the mindfulness application, BetterSleep<sup>®</sup>, installed on them, these were referred to as the MindfulPad.

BetterSleep<sup>®</sup> is an application developed to teach mindfulness through a series of different exercises. These exercises consisted of meditation education, soothing music, body scanning and guided imagery. A social worker introduced the availability of the MindfulPad during morning group therapy and provided education. Providers and nurses assessed each patient's appropriateness for the use of the MindfulPad. Patients were allowed to practice with the iPad up to two times a day.

The module also contained guidelines, developed by the multidisciplinary team, to guide staff on assessing appropriate patients. Patients who scored higher than a one, within the past 24 hours, on the Dynamic Appraisal of Situational Aggression (DASA) scale in EPIC were allowed to use the iPad. Per the DASA rating scale, a score between one to three indicates a moderate risk of violence. DASA is a dynamic tool implemented for staff are required to complete once a day and is designed to aid in risk assessment of impending aggression over a 24-hour period. DASA' validity has excellent validity of (0.65-0.82) as assured by the Area Under the Curve (Nqwaku et al., 2018). The MindfulPads were stored in a locked area only accessible by the nursing staff. 100% of staff were expected to follow the MindfulPad education guidelines for patients experiencing anxiety and/or agitation. Biweekly check-ins with the IT department and the nursing informatics nurse were conducted to ensure optimal functioning. A weekly audit of patient's chart was done by the team lead utilizing an audit tool located in REDCap. Each



patient's chart was audited for DASA scores and mood ratings within the EPIC flowsheet. PRN medication per shift was audited utilizing the patient's medication administration record (MAR). Details regarding usage of group attendance and MindfulPad usage were verified via social work and nursing staff individual patient end of shift notes. See Figure 5 for details regarding the utilized tool.

The outcome goal was a 30% reduction in as needed anti-anxiety medication usage, this was tracked by conducting chart audits on medication documentation. This data was documented by the project team lead in the run chart weekly in a private, designated work area on the unit. This data was examined in the same private designated work area and input into REDCap, a secure password-protected server. The project team lead was the only person responsible for data collection which reduced HIPAA violations and potential breaches of privacy. There were no barriers in the collection, storage, and examination of data. Anti-anxiety medication usage and documentation from chart audits were discussed weekly with staff members.

This proposal was submitted to the Institutional Review Board (IRB) for approval as non-human subjects research prior to project implementation. All data was deidentified and stored on a locked, password-protected computer. Paper audit tools were destroyed once data was entered into the password-protected computer.

### **Results**

Prior to collecting data, 100% of staff (n=23) were trained utilizing the elearning module. A run chart was used to help understand variation over time. Data on antianxiety medication usage revealed 90 observations over a 14-week period (Figure 6). Mindfulness iPad data collection began on the week of 10/21 after MindfulPad wifi connectivity issues were fixed. On

average the MindfulPad was used 1-2 times per week. Staff expressed difficulty navigating to the BetterSleep® app. Individual re-education was provided by the team lead to address difficulty navigating MindfulPads. The goal was for a reduction in anti-anxiety medication usage with the increase in usage of mindfulness resources. The run charts were continuously used to identify any potential trends, shifts, and runs.

Over the 13-week implementation period 90 patients were included in the data collection. Project data was analyzed and presented as run charts were created to outline the project's progress. Figure 6B depicts the Mindfulness Pad being used 3 times within the first week along with a 2-point increase from baseline in patient mood rating as shown in Figure 6A. However, there was no discernable reduction in usage of anti-anxiety medication. Use of antianxiety medication remained consistent with the median weekly usage of approximately seven times. Usage of MindfulPad decreased thereafter while mood ratings continued to increase. Staff was encouraged to meet with the team lead to address difficulties navigating MindfulPad. Week 5 revealed the MindfulPad being used 5 times. Patient self-rated mood on a scale from 1-10, with 10 indicating no acute distress, averaged at 4.9 during this time while use of antianxiety medication consistent with baseline scores.

By week 10, use of antianxiety medication usage data revealed a steady increase with a corresponding mood rating increase. However, utilization of the MindfulPad was 0. At the end of the 13-week implementation period, there was a discernable increase in usage of antianxiety medication, a decrease in average mood rating and low MindfulPad use. The MindfulPad presented several challenges.

Overall, 72.2% of the 90 patients attended Mindfulness group therapy and only 8.9% of the 90 patients utilized the MindfulPad tool. Of the 90 patients screened using the DASA scale, 4

patients did not meet criteria after scoring higher than a 1. However, they were included in group attendance and antianxiety medication chart review data.

### **Discussion**

During the initial implementation period, there was an increase in patient mood ratings which was a one of the desired outcomes of this quality improvement project. However, there were difficulties navigating to the BetterSleep® application after each use. The BetterSleep® application required a several free trial questions to be answered before the mindfulness exercises could be accessed. In addition, the docking station used for the charging of the MindfulPads were not properly erasing the previous user's progress. Therefore each use required the nursing staff to manually reset the MindfulPad to maintain patient privacy.

There were several similarities and differences between this project and the studies found in the literature review. All the studies from the literature review were aimed at reducing anxiety. Four out of the five studies implemented the usage of an internet-based mindfulness application to reduce anxiety. Each study utilized an application other than BetterSleep® application provided via the MindfulPad. Sampling in each study varied between inpatient hospital and at-home settings while this project was conducted in a high-income, city community, and may be less generalizable population that those reviewed in the studies.

Four of the 5 studies were conducted over a 3–8-week time frame while 1 study, focused on mindfulness education for nursing staff, was done over a 10-week timeframe. Patient satisfaction data captured from pre-study, during study and immediately after noted an increase in the intervention unit by 32 points on overall mood rating scores (Horner et al., 2014). This is relevant to this project in that staff education was initially conducted for 1-2 weeks with periodic individual re-education. Only one study utilized the Hospital Anxiety and Depression Scale

(HADS) to determine changes in anxiety levels pre and post-implementation. Huberty et al. (2021) was the first study to indicate clinically significant improvements in depression and anxiety among individuals with sleep disturbances who used the Calm ® app.

The reviewed studies all showed an improvement in mood symptoms with patients and staff alike in mindfulness measure as well; this project showed an initial increase in mood rating scores. However, mood rating fluctuated without a discernable correlation to the implementation of this project. It could be argued that a more appropriate measure of anxiety after implementing mindfulness should be measured separately from an overall mood scale.

Sustainability is essential to ensure evidence-based care by future generations with respect to social, environmental, and financial constraints (Mortimer et al., 2018). There are four principles of sustainable clinical practice as defined by The Center for Sustainable Healthcare. The principles are defined as prevention, patient empowerment and self-care, lean systems and pathways, and practical use of technologies and interventions (Mortimer et al., 2018). The proposed practice change will include staff documentation, nurse assessment, group attendance and use of the MindfulPad. This process parallels the existing practice of documenting the use of antianxiety medications for acute distress. Shift documentation of DASA score, mood rating, group attendance and end of shift notes noting use of iPad is strongly encouraged in each patient's EHR. In return, this will allow for a permanent record of the intervention and increase awareness of its direct impact on improving the quality of care.

### **Conclusion**

This quality improvement project followed evidence-based practice by implementing a mindfulness-based protocol to reduce inpatient anxiety on a behavioral health unit. This may decrease anxiety symptoms thereby improving mood, reducing use of antianxiety medication and

promote overall well-being. This project will need evidence-based adjustments that are suited for this unit's culture to include longer mindfulness staff education, an iPad-based mindfulness application with easier navigation and an anxiety rating scale with more specificity and internal validity. Future research could also include following-up with patients who have been discharged and continuing mindfulness outside of the hospital setting to reduce anxiety symptoms. This project's design is unique and cannot be applied to any other settings.

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Table 1  
*Evidence Review Table and Synthesis*

Linardon, Jake. “Can Acceptance, Mindfulness, and Self-Compassion Be Learned by Smartphone Apps? A Systematic and Meta-Analytic Review of Randomized Controlled Trials.” <i>Behavior Therapy</i> , vol. 51, no. 4, 2020, pp. 646–58. <i>Crossref</i> , <a href="https://doi.org/10.1016/j.beth.2019.10.002">https://doi.org/10.1016/j.beth.2019.10.002</a>					<b>Level and Quality</b> Level II Quality B
Purpose/ Hypothesis	Type of Evidence Research Design	Sample – Population, Size, Setting	Intervention/Procedures	Primary Outcome/Measures	Results/Conclusions
The purpose of this study had three aims: (a) to examine whether acceptance- and mindfulness-based interventions delivered via smart-phone apps can effectively enhance, mindfulness; (b) test whether the effects are influenced by certain characteristics (i.e., use of professional support, target sample, and comparison	Research Systematic Review of Random Controlled Trials with meta-analysis	<p><b>Sampling Technique:</b> Randomized controlled trials searched from December 2018-March 2019</p> <p>27 Randomized Controlled Trials, with 31 app-supported smartphone intervention conditions.</p> <p><b>Control:</b> No control group used</p> <p>Power analysis: Information not provided</p> <p>Group Homogeneity: Pooled effect size for the nine comparisons between smartphone apps and comparisons on self-compassion was <math>g = 0.31</math> (95% CI =</p>	Control: Not applicable  Intervention: Not applicable  <u>Intervention fidelity</u> Quality of the trial was assessed using four criteria from the Cochrane Risk Bias tool to include: adequate generation of allocation sequence; concealment of allocation to conditions; blinding of outcome assessors and use of incomplete data.	<p><b>Dependent Variable:</b> The effect size for changes in psychological distress.</p> <p><b>DV Measure:</b> The measure of mindfulness were the Five Facet Mindfulness Scare (FFMS) Cognitive and Affective Mindfulness Scale-Revised (CAMS-R) , Mindful Attention Awareness Scale (MAAS) and the Philadelphia Mindfulness Scare.</p>	<p>Statistical Results: Pooled effect size for the 33 comparisons between smartphone apps on acceptance and mindfulness was <math>g = 0.29</math> (95% CI =0.17,0.41).</p> <p><b>Conclusions:</b> Apps that teach mindfulness rarely utilized. however, a growing number of RCTs are beginning to be conducted to examine the positive effect of smartphone apps that are geared towards teaching mindfulness and self-compassion.</p>

<p>group; and (c ) to examine the relationship between changes in mindfulness and changes in physiological distress.</p>		<p>0.07, 0.56), with high heterogeneity (<math>I^2 = 79\%</math>). The pooled effect size for the 22 comparisons between smartphone apps and control conditions on Depression and Distress was <math>g = -0.32</math> (95% CL = -0.48, -0.16), in favor of smartphone apps. There was high heterogeneity (<math>I^2 = 75\%</math>)</p>			
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Huberty, Jennifer, et al. "A Mindfulness Meditation Mobile App Improves Depression and Anxiety in Adults with Sleep Disturbance: Analysis from a Randomized Controlled Trial." <i>General Hospital Psychiatry</i> , vol. 73, 2021, pp. 30–37. <i>Crossref</i> , <a href="https://doi.org/10.1016/j.genhosppsy.2021.09.004">https://doi.org/10.1016/j.genhosppsy.2021.09.004</a>					<b>Level and Quality</b> <b>Level I</b> <b>Quality B</b>
Purpose/ Hypothesis	Type of Evidence Research Design	Sample – Population, Size, Setting	Intervention/Procedures	Primary Outcome/Measures	Results/Conclusions
Determine the effects of a meditation app on depression and anxiety in adults with sleep disturbance, and explore the potential mediating effects of fatigue, daytime sleepiness and changes in depression and anxiety.	Research  Randomized, controlled trial design	Sampling Technique:  237 participants (wait-list control, n =126; Calm ® n=113) Participants (n=24) who did not complete demographic data were not included in analyses.	Control: Granted access to thriving after completing an 8-week assessment.  <b>Intervention:</b> The intervention group was asked to install the Calm ® app. The Calm ® app is a mindfulness meditation app that provides guided meditations, sleep specific meditations and sleep stories  <u>Intervention fidelity</u> Davidson-MacKinnon heteroscedasticity-consistent standard errors and covariance matrices	DV: Means score changes in anxiety and depression were significantly utilizing the Hospital Anxiety and Depression Scale (HADS). In comparison to the control group, participants using Calm ® had improvements in depression and anxiety. Participants' HADS scores approached or exceeded the established minimal clinically important difference by 1.5 points. Participants averaged 1.3 and 1.8 point reduction in depression and anxiety scores  State the instrument, reliability, and	<b>Statistical Results:</b> HADS scale Control group (n=124): baseline depression score of 4.8 and a post-experiment score of 5. Anxiety baseline score was 5.8 and a post-experiment score of 5.9. The intervention group (n=113) reported a baseline depression score of 6.1 and post-intervention score of 4.8 (-1.3 change); (F 6.65, p <0.001). The intervention group reported a baseline anxiety score of 6.5 and a post-intervention score of 4.7 (-1.8 change); (F 7.51,<0.001).

			(HC3) were used to protect the study from biases. In addition, to minimize bias related to attrition, both per-protocol and intent-to-treat (ITT) analyses were conducted.	measurement procedure: HADS has shown internal consistency ( $\alpha=0.82$ , $\alpha = 0.83$ for depression and anxiety subscales) and validity in clinical samples.	<b>Conclusions:</b> This was the first study to indicate clinically significant improvements in depression and anxiety among individuals with sleep disturbances who used the Calm ® app. More research is needed but this study built upon a previous study which demonstrates that mindfulness meditation apps are effective for improving anxiety and is generalizable across clinically and demographically diverse populations.
<p>Mistler, L. A., Ben-Zeev, D., Carpenter-Song, E., Brunette, M. F., &amp; Friedman, M. J. (2017). Mobile Mindfulness Intervention on an Acute Psychiatric Unit: Feasibility and Acceptability Study. <i>JMIR Mental Health</i>, 4(3), e34. <a href="https://doi.org/10.2196/mental.7717">https://doi.org/10.2196/mental.7717</a></p>					
					<b>Level and Quality</b> <b>Level III</b> <b>Quality B</b>
<b>Purpose/ Hypothesis</b>	<b>Type of Evidence Research Design</b>	<b>Sample – Population, Size, Setting</b>	<b>Intervention/Procedures</b>	<b>Primary Outcome/Measures</b>	<b>Results/Conclusions</b>
The study’s main objective was to determine	Research	Sampling Technique: Participants were recruited by a daily	Control: No control group used	<b>Dependent Variable:</b> Quantitative measurement of usability,	<b>Statistical Results:</b> Results from Participant usability and

<p>the feasibility of combining mindfulness and mobile technology for acutely ill psychiatric inpatients with schizophrenia, schizoaffective disorder, and bipolar disorder. The study also sought to understand how patients felt about using the mindfulness app, Headspace.</p>	<p>Non-Randomized, Cross-sectional study</p>	<p>screening of a hospital census by a research assistant between November 2015- June 2016.</p> <p># 50 patients were approached and 27 declined. A total of 13(26%) patients were enrolled in the study. One patient was discharged unexpectedly prior to completing the 7-day intervention. The final sample included 12 patients.</p> <p><b>Control:</b> No control used</p> <p>Power analysis: Power analysis not calculated</p> <p>Group Homogeneity: 12 participants (males, N=10, 83%; whites, N=11, 92%; mean age 33.4 [SD 10.7]; the mean total years of education 12.6 [SD 2.6]. Majority of participants were</p>	<p>Intervention: Headspace mindfulness app</p> <p><u>Intervention fidelity</u> (describe the protocol): A research assistant (RA) was responsible for recruiting patients and was responsible for instructing patients to follow the daily mindfulness exercises for at least 10 minutes a day over 7 days</p>	<p>mindfulness(anger/anxiety level), and acceptability.</p> <p><b>DV Measure:</b> A rating scale adapted from a previous work by Ben-Zeev that assessed the acceptability and usability of the app. The study augmented quantitative findings with qualitative methods in an effort to examine participants' experience using the mindfulness app, Headspace.</p>	<p>acceptability questionnaire. The Info was easy to understand: Neutral: n=1 (8%); Agree: n=4 (33%); Strongly Agree: n=7 (58%). The app made me more anxious: Strongly Disagree n=7 (58%); Disagree: n=5(42%). The app made me less anxious: Neutral: 1=n(8%); Agree: n=9(75%); Strongly Agree: n=2(17%). The app helped me manage symptoms: Disagree n=1(8%); Neutral:n=3(25%); Agree: n=5(42%)</p> <p><b>Conclusions:</b> Mindfulness app are easily to utilize on an inpatient unit as long as patients meet certain criteria. There is clinical significance that the app helps reduce anxiety in this patient population and may contribute to a reduction in aggressive</p>
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		<p>unemployed (9/12),75%). The most common diagnosis was schizoaffective disorder (6/12, 50%). An equal number of participants with bipolar diagnosis (3/12, 25%) and schizophrenia (3.12, 25%)</p>			<p>behavior linked to anxiety.</p>

<p>Horner, J. K., Piercy, B. S., Eure, L., &amp; Woodard, E. K. (2014). A pilot study to evaluate mindfulness as a strategy to improve inpatient nurse and patient experiences. <i>Applied Nursing Research</i>, 27(3), 198–201.  <a href="https://doi.org/10.1016/j.apnr.2014.01.003">https://doi.org/10.1016/j.apnr.2014.01.003</a></p>					<p><b>Level and Quality</b>  <b>Level II</b>  <b>Quality C</b></p>
Purpose/ Hypothesis	Type of Evidence Research Design	Sample – Population, Size, Setting	Intervention/Procedures	Primary Outcome/Measures	Results/Conclusions
<p>This study explored the impact of mindfulness training for nursing staff on levels of mindfulness, compassion satisfactions, burnout, and stress. The study also attempted to address the impact which nursing education on mindfulness contributed to patient satisfaction scores.</p>	<p>Practice</p>	<p>Sampling Technique: Staff on one nursing unit volunteered to participate in a mindfulness training program</p> <p>A total of 43 participants were included in the study.</p> <p><b>Control:</b> Control group was composed of nursing staff from a similar unit that did not receive mindfulness classes</p> <p><b>Intervention:</b> 10-week mindfulness training program which focused on breathing; developing self-awareness and tips on how to be fully present when interacting with a patient.</p>	<p>Control: Control group was composed of nursing staff from a similar unit that did not receive mindfulness classes</p> <p>Intervention: 10-week mindfulness training program which focused on breathing; developing self-awareness and tips on how to be fully present when interacting with a patient.</p> <p><u>Intervention fidelity:</u> JMP software was utilized to analyze results from survey. Differences across time in both groups were compared and contrasted using a 2-tailed t-test and one way ANOVA.</p>	<p>DV: <b>Dependent Variable:</b> The Mindful Attention Awareness Scale (MAAS) when compared to the control group showed no statistical significance in score but post-intervention scores rose in the intervention group while scores remained the same in the control population. The Professional Quality of Life (ProQOL) Scale version 5 showed no statistical significance.</p> <p><b>DV Measure:</b> The Mindful Attention Awareness Scale (MAAS) and the Professional Quality of Life (ProQOL) Scale version 5 was used.</p>	<p><b>Statistical Results:</b>                  MASS score:                  Intervention group:                  Pretraining: 4.2; Post-training:4.4. Control Group: Pretraining:4.7; Post-training:4.7</p> <p><b>Conclusions:</b> Patient satisfaction data captured from pre-study, during study and immediately after noted an increase on the intervention unit by 32 points on “overall rating”. Score on “communicating with nurses increased by 17 points.</p>



		<p>Power analysis:</p> <p>Group Homogeneity:</p>			
<p>Heckendorf, H., Lehr, D., Ebert, D. D., &amp; Freund, H. (2019). Efficacy of an internet and app-based gratitude intervention in reducing repetitive negative thinking and mechanisms of change in the intervention’s effect on anxiety and depression: Results from a randomized controlled trial. <i>Behaviour Research and Therapy</i>, 119, 103415.  <a href="https://doi.org/10.1016/j.brat.2019.103415">https://doi.org/10.1016/j.brat.2019.103415</a></p>					
					<p><b>Level and Quality</b>  <b>Level I</b>  <b>Quality C</b></p>
<p><b>Purpose/ Hypothesis</b></p>	<p><b>Type of Evidence Research Design</b></p>	<p><b>Sample – Population, Size, Setting</b></p>	<p><b>Intervention/Procedures</b></p>	<p><b>Primary Outcome/Measures</b></p>	<p><b>Results/Conclusions</b></p>

<p>This study compared a 5-week internet and app-based gratitude intervention with a wait-list control group to measure the app's effectiveness in reducing Repetitive negative thinking (RNT). RNT has been identified as a transdiagnostic process involved in anxiety.</p>	<p>Research Two-arm, Randomized control trial</p>	<p>Sampling Technique: A total of 262 participants were randomized, 132 allocated to the experimental group. 130 Allocated to the control group (waitlist) <b>Control:</b> Waitlist group had access to where usual care offered by routine healthcare services. <b>Intervention:</b> Participants in the intervention group were offered access to GET.ON Gratitude. This online intervention combines online gratitude training with a mobile gratitude app. The gratitude app was required to be used daily  Power analysis: Power analysis for a two-tailed test with 80% power and a significance level of</p>	<p>Control: Control group was free to utilize any resources offered by routine healthcare services.  Intervention: The gratitude app was required to be used daily.  <u>Intervention fidelity</u> : All instruments were self-report measures assessed online</p>	<p>DV: State the instrument, reliability, and measurement procedure:</p>	<p><b>Statistical Results:</b> Scoring &gt;9 on the General Anxiety Disorder (GAD-7), significant, moderate differences were identified for anxiety scores <math>F(1,213) = 7.0</math>, <math>p=.009</math>, <math>d=0.62</math>, 95% CL [0.23,1.01]. <b>Conclusions:</b> Further research is required to confirm benefits. However, this study was able to show how an app-based gratitude intervention can reduce transdiagnostic RNT.</p>
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		<p>5%. This indicated a required sample size of N=262 individuals to detect an effect. Power Analysis achieved</p> <p>Group Homogeneity: Participants were predominantly female (58.8%), Caucasian (91.6%), living in Germany (90.8%), and either married or cohabitating (54.2%). 41.2% reported moderate to severe anxiety. The subjects' mean age was 42.2 years(SD =10.9)</p>			
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Table 2  
Evidence Synthesis

Category (Level Type)	Total Number of Sources/Level	Overall Quality Rating	Synthesis of Findings
Level 1 - Experimental study · Randomized Controlled Trial (RCT) · Systematic review of RCTs with or without meta-analysis	II	B	More RCTs need to be conducted to determine effectiveness of mindfulness apps on reduction in anxiety and RNT. Overall, there is a link between improvement in anxiety and the utilization of mindfulness mobile apps.
Level II · Quasi-experimental studies · Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis	II	B	Patient satisfaction is a key component in educating nurses on how to use mindfulness during their interaction with patients. Overall Mindfulness education for staff can help improve staff job satisfaction but more studies are needed.
Level III · Non-experimental study · Systematic review of a combination of RCTs, quasi-experimental, and non-experimental studies, or non-experimental studies only, with or without meta-analysis · Qualitative study or systematic review of qualitative studies with or without meta-synthesis	I	B	Mindfulness app are easily to utilize on an inpatient unit as long as patients meet certain criteria. There is clinical significance that the app helps reduce anxiety in this patient population and may contribute to a reduction in aggressive behavior linked to anxiety.

<p>Level IV · Opinion of respected authorities and/or reports of nationally recognized expert committees/consensus panels based on scientific evidence</p>			
<p>Level V · Evidence obtained from literature reviews, quality improvement, program evaluation, financial evaluation, or case reports · Opinion of nationally recognized expert(s) based on experiential evidence</p>			
<p>Recommendations Based on Evidence Synthesis: Practice Change project must ensure that key aspects from each study is used. Practice change would only benefit patients that are able to read at a 6<sup>th</sup> grade level. In addition, staff should be educated on mindfulness to help promote better interaction between staff and patient. Practice change should be implemented as often as possible to achieve maximum potential to help reduce patient anxiety and promote patient education.</p>			

Table 3

*Measurement Plan*

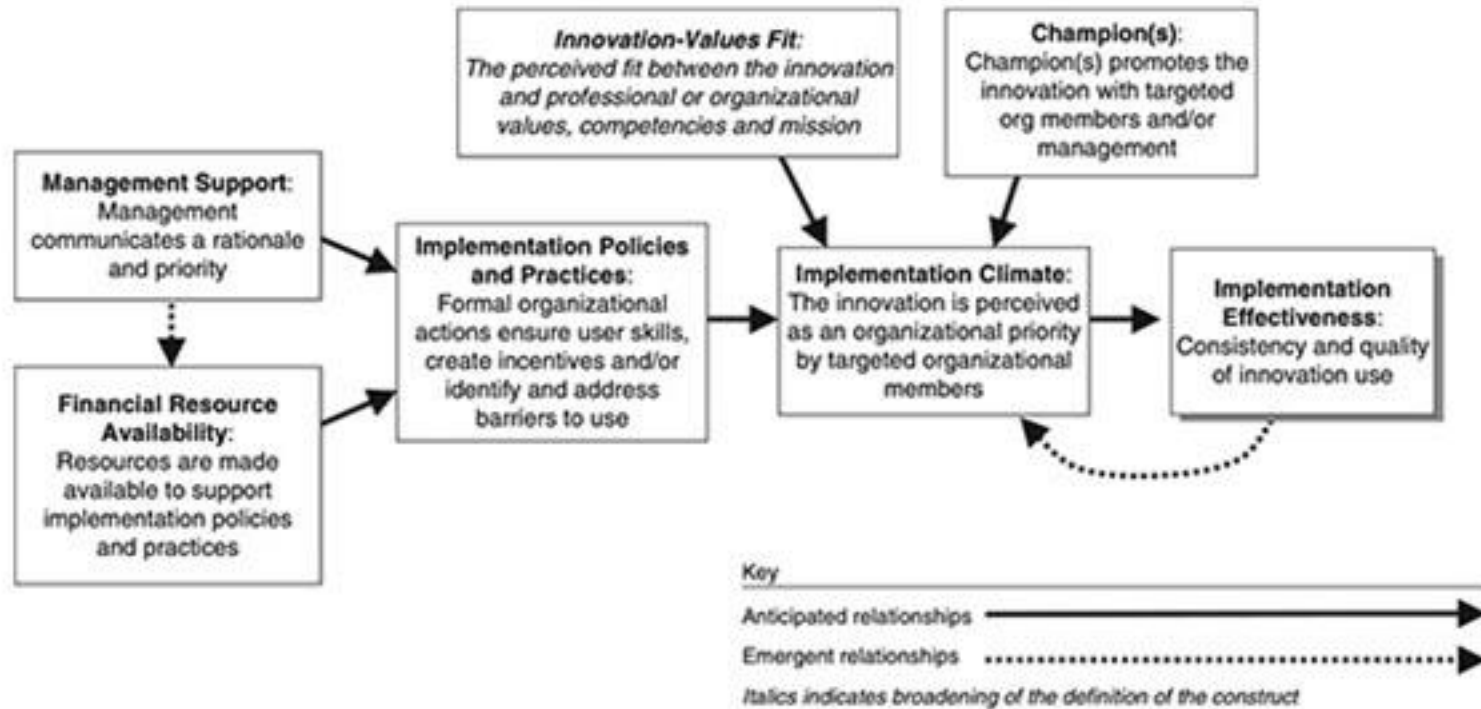
PLAN		
Measures		
Project Goals	Measure Pre-Implementation	Measure During Implementation
Structure Goal(s)		
1. Policy and procedure for MindfulPad algorithms and criteria created	n/a	
2. Policy and procedure for MindfulPad approved by leadership	n/a	
3. Scope and practice of Mindfulness Bundle created by team	n/a	
4. Nurses will be educated on basic mindfulness educational and simulation skills training developed by team	n/a	Post-intervention test on knowledge of basic mindfulness techniques
5. Social work and group therapy leaders introduce MindfulPad in Community Meeting (morning group)	Number of groups where MindfulPad is explained	Number of Patient requesting MindfulPad
Process Goal(s)		
1. 100% of nurses on the inpatient Behavioral health unit will follow the MindfulPad tool for patients experiencing anxiety/agitation	<b>Numerator:</b> # of nurses that utilize the MindfulPad algorithm during a patient crisis within 30 minutes <b>Denominator:</b> # patient behavioral crisis within 30 minutes	<b>Numerator:</b> # of nurses who follow MindfulPad within 30 minutes <b>Denominator:</b> # of anxious/agitated/insomnia patients
2. 100% of Mindfulness tool will be provided within 15 minutes of patient's behavior/expressing behavioral crisis	<b>Numerator:</b> # of nurses that utilize the Mindfulness tool during a patient crisis within 30 minutes	<b>Numerator:</b> # of Mindfulness Intervention tool provided within 30 minutes

		<b>Denominator:</b> # patient behavioral crisis within 30 minutes	<b>Denominator:</b> # of Mindfulness Intervention tool provided more than 30 minutes
	Outcome Goal(s)		
	1. 100% Nursing staff will be educated on Mindfulness techniques for patients in behavioral crisis	<b>Numerator:</b> # of Nursing staff educated on Mindfulness techniques <b>Denominator:</b> # of Nursing staff not educated	<b>Numerator:</b> # of patients using Mindfulness education <b>Denominator:</b> # of nurses
	2. 100% Nursing staff will be educated on MindfulPad usage	<b>Numerator:</b> # of nursing staff educated on MindfulPad procedure <b>Denominator:</b> # of nursing staff not educated on MindfulPad procedure	<b>Numerator:</b> # of patients experiencing behavioral crisis <b>Denominator:</b> # of restraints used
	3. 30% reduction in as needed anti-anxiety medications used for patients experiencing crisis	<b>Numerator:</b> # of as needed anti-anxiety medications used for patients experiencing crisis <b>Denominator:</b> # of as needed anti-anxiety medications used for patients experiencing crisis	Post-intervention PRN usage via chart audit
	4. 90% of patients will attend mindfulness group therapy	<b>Numerator:</b> # of patient that attended group therapy <b>Denominator:</b> # of patient that did not attend group therapy	



Figure 1  
*Framework for Complex Implementation*

**Figure 1**  
**Conceptual Framework of Complex Innovation Implementation**



Source: Adapted from Klein and Sorra (1996, 1056).

Figure 2  
Fishbone Model

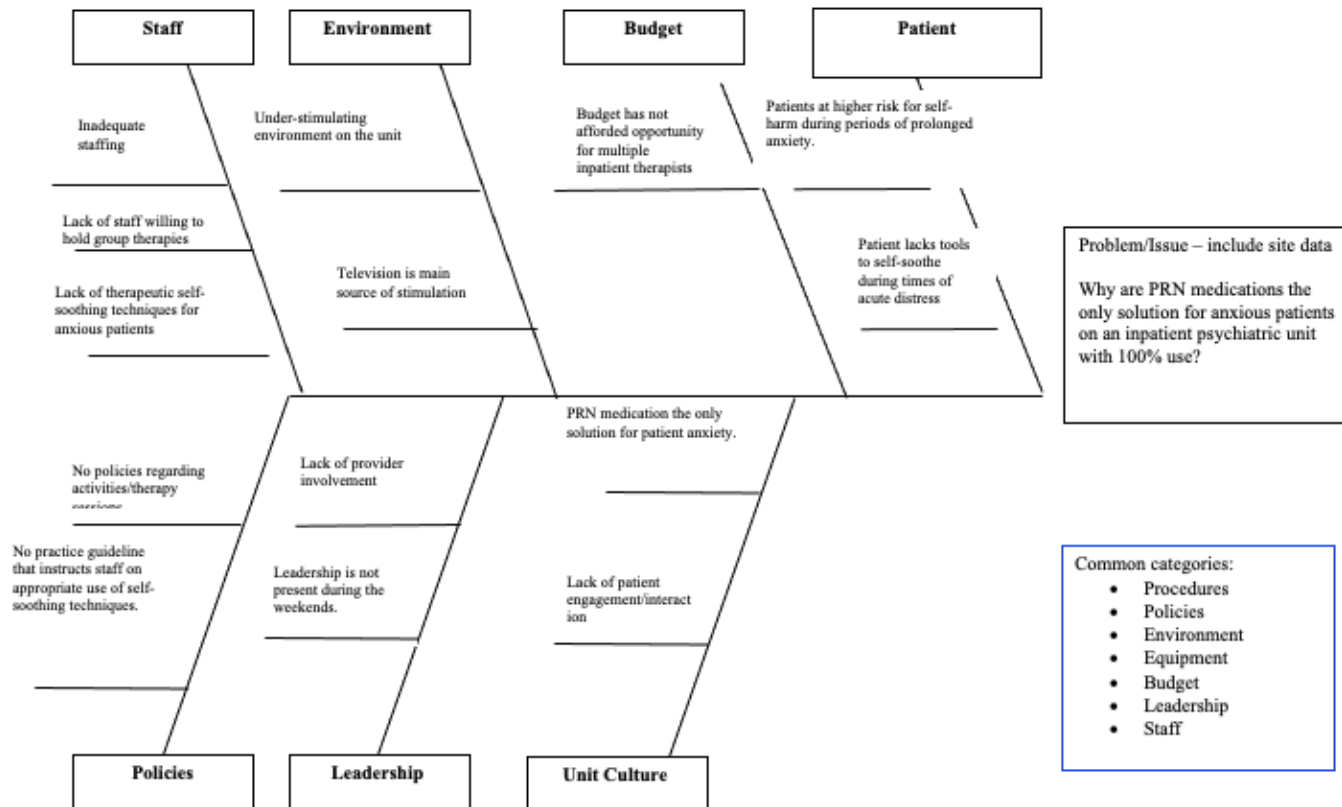


Figure 3  
Current Process Map

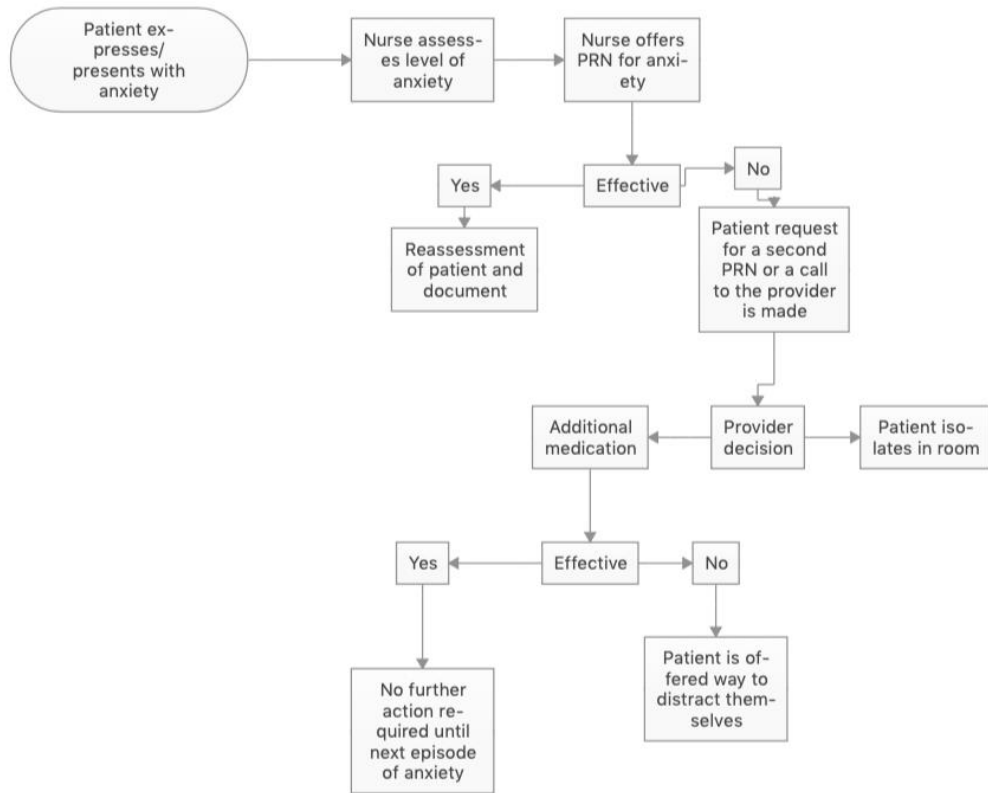


Figure 4  
*Desired Process Map*

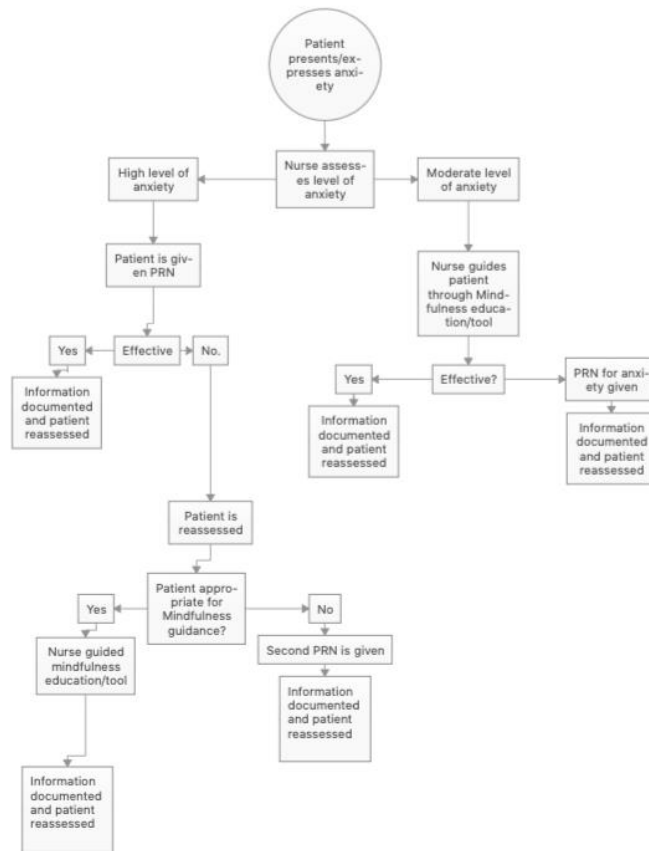


Figure 5:  
*Audit Tool*

*Decreasing Anxiety Levels and use of Anti-anxiety Medication in the Behavioral Health Inpatient Setting*  
*Page 1*

**7W Mindfulness Audit Tool**

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Patient code \_\_\_\_\_

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DASA score \_\_\_\_\_

---

Group Attendance  Yes  
 No

---

Mood Rating \_\_\_\_\_

---

Antianxiety Medication per shift \_\_\_\_\_

---

MindfulPad Provided  Yes  
 No

Appendix A:

Education Lesson Plan

Learning Objectives	Content Outline	Method of Instruction	Time Spent	Method of Evaluation
<p>By the conclusion of the session, the learner will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify appropriate patients for intervention.</li> <li>2. Basic knowledge of mindfulness and common techniques</li> </ol>	<ul style="list-style-type: none"> <li>- EPIC's Dynamic Appraisal of Situational Aggression (DASA) Flowsheet</li> <li>- Mindfulness concepts</li> <li>- MindfulPad log in instructions</li> </ul>	<p>eLearning Module</p>	<p>15 minutes</p>	<p>5 Question quiz at the end of the module</p>

Figure 6: Anti-anxiety medication usage

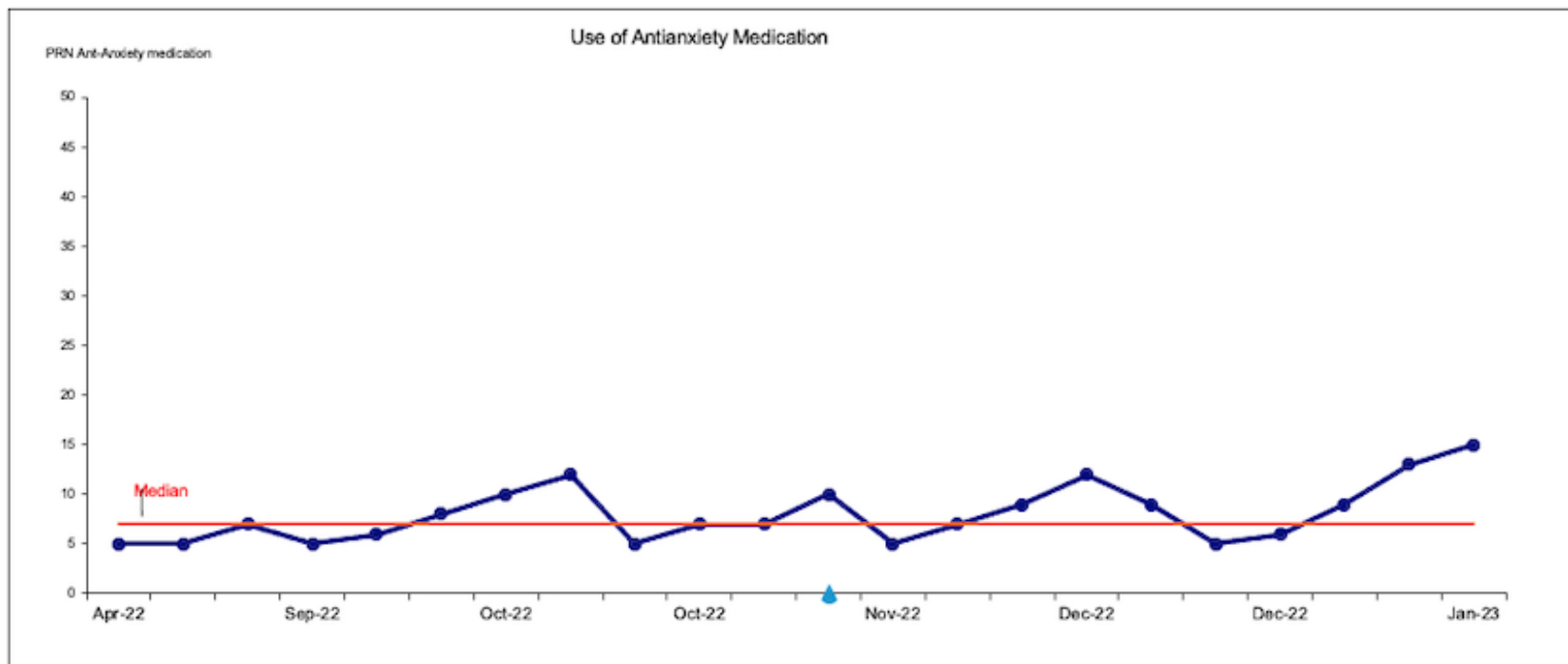
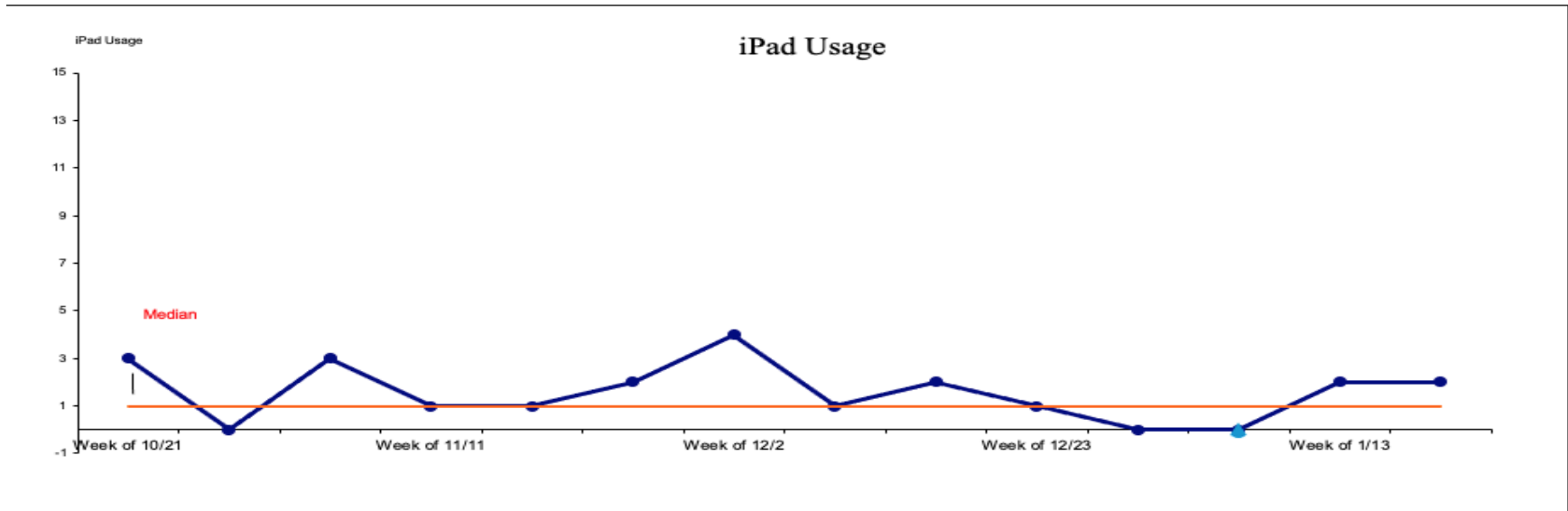


Figure 6A: Mood Rating

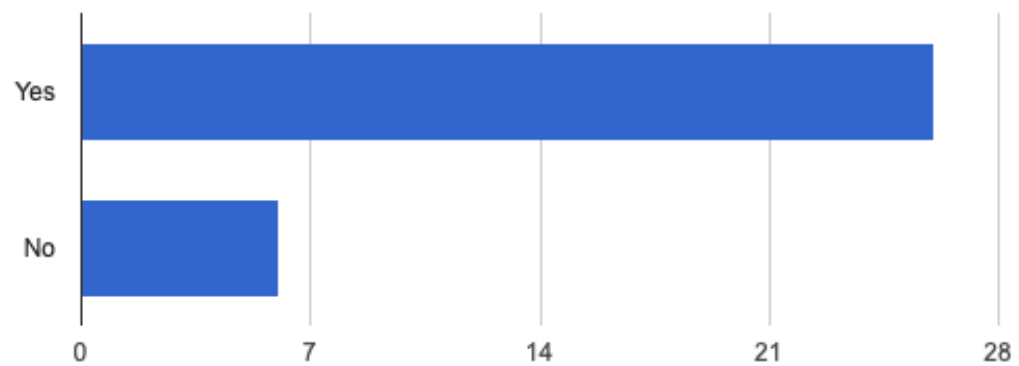




Figure 6B iPad Usage



*Figure 7: Mindfulness Group therapy attendance*



*Figure 7A: Mindfulness Group therapy attendance*

