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Mindfulness Intervention to Decrease Post-Disaster Anxiety

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ABSTRACT

The objective of this study was to evaluate the effectiveness of a mindfulness-based intervention to reduce post-disaster anxiety disorders following Hurricane Katrina and the Deepwater Horizon Gulf Oil Spill. The sample consisted of 14 patients of a community health clinic who were 55 years and older, with a diagnosis of anxiety, and with a score of >10 on the Generalized Anxiety Disorder-7 (GAD-7) assessment scale. The intervention was comprised of three individual sessions and included education about the collaborative approach to anxiety, documentation of expectations of the participants and their anxiety triggers, provision of mindfulness training, and re-evaluation of anxiety by the patient at subsequent sessions. Participants completed a pre-and post-intervention GAD-7 questionnaire. The intervention resulted in a statistically significant decrease in overall anxiety. The study indicated that mindfulness-based therapy can effectively reduce post-disaster anxiety and that a permanent nurse consultation liaison is needed at mental health care facilities following disasters.

Keywords

Mindfulness, Anxiety, Post-disaster nursing care.

Introduction

On August 29, 2005, the United States experienced a natural disaster of unprecedented proportions. Hurricane Katrina destroyed coastal communities throughout Louisiana and Mississippi including one small community in Louisiana, St. Bernard Parish [1]. The community of St Bernard was chosen for this study because Hurricane Katrina inundated the community with 10-15 feet of floodwater from breeched levees, destroying all homes, businesses, churches, medical facilities, government buildings, and the only mental health clinic and hospital A large oil spill from a local refinery, that resulted from the flood waters, further complicated rebuilding and recovery in the community. A lack of mental health services resulted because mental health professionals were either unable or unwilling to rebuild in a devastated community [2]. Five years after Hurricane Katrina, when the community was amid rebuilding its public and health care infrastructure, the Deepwater Horizon Gulf of Mexico oil spill occurred. This disaster was also devastating because many St. Bernard residents are commercial fishermen and rely on the seafood industry for their income.

Disasters, natural and manmade, have the potential to cause negative consequences in communities and adversely impact the lives of all community members [3]. Typical negative consequences after a disaster include feelings of anxiety, depression, stress, and grief [4]. In large scale disasters, local communities are impacted in different ways, often these impacts are underestimated. Many reactions to, and symptoms of, these disasters are related to biological and cultural factors [5]. Resource loss after a hurricane is directly associated with distress both at the time of the disaster and for a long period of time post-hurricane [6,7].

The epidemiology of anxiety demonstrates disparities across races and ethnic groups. Lifetime anxiety rates are higher in Whites than other races and ethnic groups. In fact, in the U.S. Whites have higher lifetime prevalence rates of social anxiety, generalized anxiety disorder, as well as pain disorder. Across minorities, the lifetime prevalence of social anxiety for Whites is 12%, 8.7% for African Americans, 8.0% for Hispanic Americans, and 5.5% for Asian Americans [8].

Mindfulness is an intentional, non-judgmental attention to the present moment. Mindfulness can be thought of as a needed aspect of the development of compassion and a shift in the way one thinks

about local ecological crises [9]. Mindfulness practice is a process where one focuses their attention on the present moment in an open, accepting way [10]. This acceptance allows for a nonjudgmental experience of the present moment and subsequently lessens the effects of stressors. It allows one to observe feelings and emotions in a safe way until the feelings pass and demonstrates how to respond to these feelings reflectively, instead of reflexively [11].

Mindfulness has been used to address many stressful situations. The challenge of climate change and associated risks require cultural adjustments to a focus on sustainability. Mindfulness was used to adapt to climate change by developing a mindful climate adaptation [12]. Mindfulness stress reduction has been proven to be successful in improving the mental health of workers. Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) resulted in reduced levels of emotional exhaustion, stress, psychological distress, depression, anxiety, and occupational stress. Additionally, MBSR and MBCT improved mindfulness, self-compassion, quality of sleep, and relaxation [13]. Mindfulness interventions had been reported to have positive effects on chronic pain, generalized anxiety disorders, and depression relapse. In a study of mindfulness-based stress reduction in a community setting, it was found that participants who self-selected and self-paid for interventions experienced statistically significant decreases in perceived stress and symptoms of anxiety [14].

A systematic review and meta-analysis of descriptive/qualitative studies described the effect of mindfulness-based therapy on anxiety and depression [15]. The review included 39 studies and a total of 1,140 participants receiving mindfulness-based therapy for many different conditions including anxiety and depression. Mindfulness-based therapy effectiveness was measured by effect size. Effect size indicated in pre- and post-treatment samples of patients that mindfulness-based therapy was moderately effective in improving anxiety and mood states. In patients with anxiety and mood disorders, the effect sizes for mindfulness-based therapy were robust at 0.97 and 0.95 (Hedges g), unrelated to number of treatments given, and were continued after follow-up. According to these results, mindfulness-based therapy may be a beneficial treatment for patients suffering from anxiety and mood disorders. It is important to note, anxiety is not only a psychological disorder, but can manifest with physical symptoms, including disability and mortality [16].

Methods

Prior to Hurricane Katrina, there were approximately 67,229 people living in St. Bernard Parish. The number of individuals that had returned by spring 2014 was 35,897. The majority of residents (63.8%) were between the ages of 19-64 years, 9.2% were 65 years or older, and 27% were 18 years and under. Most residents were White/Caucasian (74%), followed by Black/African Americans at 17.7%, Hispanics at 9.2%, Asians at 1.9%, and American Indian or Alaskan Native at 0.7%. Residents composed of two or more races made up 2.7% of the population [17].

At the time of this study the St. Bernard community held the designation of a Health Professional Shortage Area (HPSA) in medical, mental, and dental health care. It was assumed that post-Katrina anxiety prevalence in the community was high, but exact numbers of those affected by post-Katrina anxiety was not known. A southern Louisiana university's Institutional Review Board (IRB) determined the study did not place subjects at more than minimal risk and approved the study.

The study used a non-probability purposive sample of patients 55 years of age or older who were suffering from anxiety and were seeking mental health services at the St. Bernard Community Health Center (a federally qualified health center). A mixed method was used, which included a one group pre-test post-test concurrent design, without a control group. Participants completed a GAD-7 question pre- and post-intervention (Figure 1).

- Know your triggers
- Practice mindfulness
- Be self-reflective by keeping a diary
- Take time for yourself
- Eat heathy
- Exercise
- Positive self-talk
- Spend time with family and friends
- Pet therapy
- Take up a hobby (e.g., gardening, painting)

Figure 1: Take Control of Your Anxiety.

The purposive sample consisted of patients at the St. Bernard Community Health Clinic that were 55 years of age and older, with a diagnosis of anxiety. Other inclusion criteria were patients seeking mental health services, and a score of 10 or greater on the Generalized Anxiety Disorder 7-item scale (GAD-7) assessment scale. Exclusion criteria consisted of age of 54 years and younger; presence of serious mental disorders, such as bipolar disorder, schizophrenia, or dementia; GAD-7 score less than 10. A total of 14 participants were recruited, two males and 12 females. The GAD-7 is a self-reported scale which consists of seven questions based on DSM-IV criteria that ask about symptoms over the past two weeks specifically about worry, nervousness, restlessness, and irritability [18]. The individual items produce ordinal level data, with scores ranging from zero (not at all) to three (nearly every day) and are added for a summative score. The total GAD-7 score can range

from 0 to 21 and correspond to levels of anxiety. For example, GAD-7 scores of 5, 10, and 15 correspond to mild, moderate, and severe levels of anxiety on the scale. The study inclusion GAD-7 scores of 10 or greater indicate moderate anxiety.

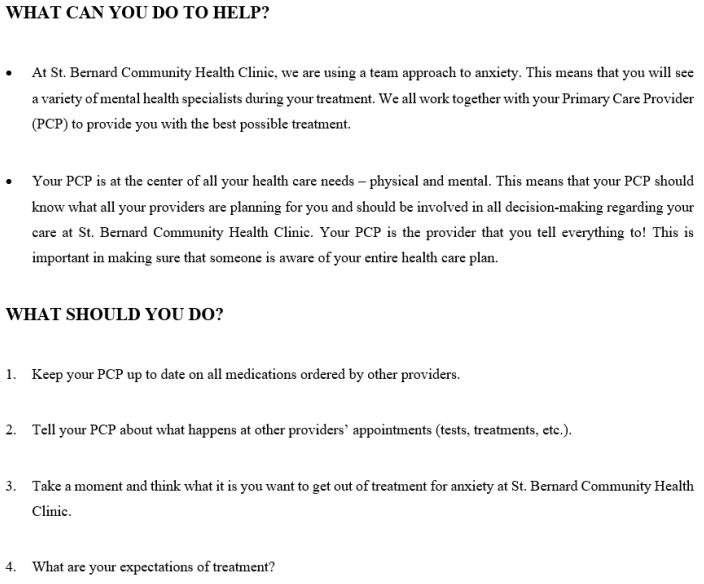
Recruitment efforts began with collaboration with the clinic psychiatrist. A list of over 20 patients, who fit the inclusion criteria including an anxiety diagnosis, was delivered. The restrictive inclusion criteria were a challenge in recruiting participants. The candidate patients were contacted by telephone by the RN study coordinator to determine their interest in participating in the study. Several of the candidate patients refused to participate for a variety of reasons, including lack of transportation. The RN study coordinator contacted the local Council on Aging (COA) and visited to recruit participants. The contact with the COA was instrumental in recruiting the study participants.

Most participants (85.7%) were female. This may be due to the possibly that more females in this parish sought treatment for anxiety than males. Thirteen of the participants were Caucasian and one was Asian. The ages of participants ranged from 58 to 91 years (X= 67.5, SD= 8.99). The median age was 65 years, with three modes of 62, 65, and 70 noted. Most of the sample (92.9%) was Caucasian, with only one Asian participant and no African Americans. It is not surprising that most of the sample was Caucasian, since the majority of St. Bernard's population is comprised of this ethnicity. It is interesting that one Asian was recruited when only 1.9% of the population is Asian.

It is not surprising that most of the sample was White/Caucasian, due to the demographics of St. Bernard's population. However, the sample is appropriate given the epidemiology of anxiety disorders mentioned above. The initial GAD-7 questionnaire, which served as pre-test for baseline level of anxiety was then read to each potential participant by the RN study coordinator and subsequently tallied. Participants with GAD-7 scores of >10 and interested in participating were asked to read and, if in agreement, signed a voluntary participation agreement form.

The intervention consisted of three individual sessions with the study coordinator, a registered nurse (RN) every other week, with each session lasting approximately one hour. The first session involved the recording of participants' anxiety triggers, supports, goals for treatment, and discussion of current coping strategies. Each participant was provided a written guide to current coping mechanisms used to control anxiety. Each participant was given a document titled Take Control of Your Anxiety (Figure 1). Each participant was also provided written information of a team approach to anxiety treatment (Figure 2).

The role of the primary care provider as the gatekeeper for care and how providers work together for collaborative treatment of the patient was discussed. And finally, each participant was provided written information on mindfulness, which included the use mindfulness techniques, and their effectiveness in relieving anxiety (Figure 3). Participants were instructed to try mindfulness techniques during everyday activities like breathing, eating, and walking. Mindfulness meditation during these activities involves slowing of the breath, which may decrease physical symptoms of stress by balancing sympathetic and parasympathetic responses to stress and the environment [19].



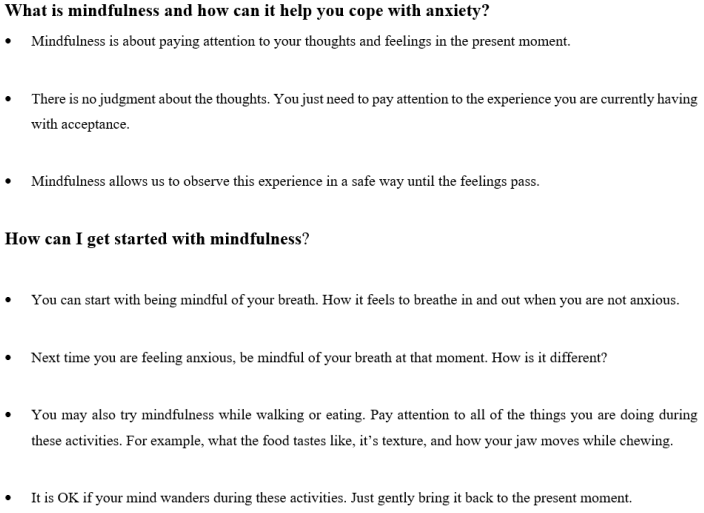
WHAT CAN YOU DO TO HELP?

- At St. Bernard Community Health Clinic, we are using a team approach to anxiety. This means that you will see a variety of mental health specialists during your treatment. We all work together with your Primary Care Provider (PCP) to provide you with the best possible treatment.
- Your PCP is at the center of all your health care needs – physical and mental. This means that your PCP should know what all your providers are planning for you and should be involved in all decision-making regarding your care at St. Bernard Community Health Clinic. Your PCP is the provider that you tell everything to! This is important in making sure that someone is aware of your entire health care plan.

WHAT SHOULD YOU DO?

1. Keep your PCP up to date on all medications ordered by other providers.
2. Tell your PCP about what happens at other providers' appointments (tests, treatments, etc.).
3. Take a moment and think what it is you want to get out of treatment for anxiety at St. Bernard Community Health Clinic.
4. What are your expectations of treatment?

Figure 2: Team Approach to Anxiety.



What is mindfulness and how can it help you cope with anxiety?

- Mindfulness is about paying attention to your thoughts and feelings in the present moment.
- There is no judgment about the thoughts. You just need to pay attention to the experience you are currently having with acceptance.
- Mindfulness allows us to observe this experience in a safe way until the feelings pass.

How can I get started with mindfulness?

- You can start with being mindful of your breath. How it feels to breathe in and out when you are not anxious.
- Next time you are feeling anxious, be mindful of your breath at that moment. How is it different?
- You may also try mindfulness while walking or eating. Pay attention to all of the things you are doing during these activities. For example, what the food tastes like, it's texture, and how your jaw moves while chewing.
- It is OK if your mind wanders during these activities. Just gently bring it back to the present moment.

Figure 3: Mindfulness.

The second session involved discussing the participant's progress and their anxiety level since the initial session. The RN study coordinator addressed patient expectations and assessed if they had been met. The RN study coordinator also evaluated and recommended ways that anxiety could have been dealt with more successfully. The concepts of mindfulness were reinforced and other positive methods to reduce anxiety was discussed, including journaling, gardening, pet therapy, and support of friends and family. The RN study coordinator discussed the upcoming visit to the participants' primary care provider (PCP) or mental health provider (MPH) and assisted in identification of needs or concerns that should be discussed.

The third and final session included all the processes involved in the second session along with the completion of the GAD-7 scale as post-test. These GAD-7 questions were again asked to the participant by the RN study coordinator and tallied. Participants were asked how they felt they had progressed in meeting their expectations. Lastly, they were given encouragement to continue with the methods that worked for them, along with continuing to see their regular PCP and MHP, as needed.

To maintain patient confidentiality, participant numbers were used to identify patients during data collection and analysis. Patient confidentiality was maintained throughout the project. The Patient Care Registry was filled out as part of the initial intervention and placed in a folder indicating the participant number. The informed consent form was kept in the folder as well. Notes and recordings from the second and final sessions were recorded on a separate and new copy of the Patient Registry and added to each participant's folder. Data collected were stored in an Excel file and included the following: Participant number, GAD-7 pre-test and post-test scores, age, gender, ethnicity, anxiety triggers, support systems, coping, goals for treatment, second session notes, final session notes, and the RN study coordinator/provider input.

Data analysis consisted of descriptive statistics of demographic information. There was a total of 14 participants; 12 participants were female and 2 were males. Thirteen of the participants were Caucasian and one was Asian. The sample age ranged from 58 to 91 years old with a mean score of 67.5 years. The median age was 65 years with a standard deviation of 8.99.

Results

Participant GAD-7 scores were summed and added to an excel spreadsheet file as ordinal level data. SPSS (version 21.0) was used to analyze the pre- and post-intervention GAD-7 scores descriptive statistics [20]. Participants' rankings were compared using a Wilcoxon signed-rank test to assess statistical differences. Pre-intervention GAD-7 scores had a mean score of 15.5 and a standard deviation of 3.08. Pre-intervention GAD-7scores ranged from 10 to 21. The post-intervention GAD-7 scores had a mean of 11 and a standard deviation of 6.7, with scores ranging from 0 to 20 (Table 1).

Males	2
Females	12
White	13
Asian	1
Age Range	58-91 years
Mean Age	67.50 years
Median Age	65 years
Age Standard Deviation	8.99 years

Table 1: Study Participants.

This indicated that mean GAD-7 scores were lower post-intervention. A Wilcoxon signed ranks test indicated that participation in greater than 50% of the sessions resulted in a statistically significant change in post-intervention GAD-7 scores compared to pre-intervention GAD-7 scores ($z = -2.932$, $p = 0.003$). See Table 2 for the Wilcoxon signed rank test results. All 14 participants included in the study attended 100% of the intervention sessions (i.e., the initial, second, and final sessions). All participants completed a pre- and post-intervention GAD7 questionnaire. Thirteen of the 14 participants had lower GAD-7 scores post-intervention.

	N	Mean	Standard. Deviation	Minimum	Maximum
Pre-intervention GAD7	14	15.571	3.0813	10.0	21.0
Post-intervention GAD7	14	11.000	6.7482	0	20.0

Table 2: Study Participants' GAD-7 Scores.

In addition to the Wilcoxon signed rank test, a medical record review was conducted to review for provider assessment of anxiety. This qualitative component to the analysis provided a more complete understanding of the patients' responses to the intervention and supplemented the patients' quantitative GAD-7 scores as a method for triangulation. Data analysis of patients' medical records included input from two groups, providers in both primary care and mental health, on their statements about participant anxiety. Out of the 14 participants 50% visited a PCP at a different location, which resulted in the inability to review their medical records or had no recent anxiety assessment. Results of the medical records review were a) the physical health of two participants worsened; b) one participant was hospitalized between the second and third session, but had a 1 point decrease in the final GAD-7 score; c) two participants were using new coping methods and were open for mental health therapy; d) one participant had poor insight and the anxiety level was unchanged; e) one participant had better coping skills and a reduction in anxiety; f) one participant had increased anxiety due to financial problems, and was the only one with an increased GAD-7 score, and may be an outlier.

	N	Mean Rank	Sum of Ranks
Negative Ranks	13*	7.62	99.00
Positive Ranks	1+	6.00	6.00
Ties	0^		
Total	14		

Table 3: Pre- and Post-Intervention GAD-7 Ranks Comparison.
*Post-intervention GAD& < Pre-intervention GAD7.
+ Post-intervention GAD& > Pre-intervention GAD7.
^ Post-intervention GAD& = Pre-intervention GAD7.

Additionally, analysis of participants' anxiety triggers, supports, goals for treatment, and discussion of current coping strategies, as well as the RN study coordinator's recordings about participant anxiety levels from the beginning to the end of the program provided another perspective. Self-evaluation of participants on their anxiety was a fourth source of data triangulation. In this way, multiple triangulations added credibility to the study results.

The RN study coordinator's overall impressions and the

participants' self-evaluation of anxiety were also assessed to triangulate data and give a more complete picture of the impact of the project. Overall, the RN study coordinator indicated that 12 of the 14 participants were utilizing better coping methods, were better able to identify anxiety triggers, and appeared less anxious overall. However, three of the participants were having significant health problems by the end of the study. One participant with health issues reported being still frustrated with their health but was feeling slightly better, regarding anxiety. This participant was open to coping techniques and had a high degree of self-awareness according to the RN study coordinator. Another participant with health issues had significant anxiety and, despite a 1-point decrease in the final GAD-7 score, reported their anxiety was the same and she was not using any of the coping strategies. The third participant with health issues reported their anxiety had not changed.

Of the 14 participants' self-evaluations of anxiety, 11 reported that they felt less anxious and had better coping skills; two indicated that their anxiety was about the same, and one participant stated the anxiety was worse. Feedback from the participants regarding the intervention was that it was helpful to have someone to talk to and listen. Overall, the qualitative data supported the quantitative results that participants had decreased rates of anxiety following the intervention.

Discussion and Implications for Nursing

Nurses are ideal members of the mental health team both clinically and as a consultation liaison, as well. A RN consultation liaison is a facilitator of mental health care in a primary care setting, while the primary care provider remains the central provider of care [21]. There is evidence that a consultation liaison does improve patient satisfaction, adherence, and mental health. Additionally, consultation liaison is an appropriate nursing function. Furthermore, studies have suggested that mindfulness-based therapy has moderate effectiveness in improving anxiety, which gives further credence to the intervention chosen for this study [22]. This study shows that a RN consultation liaison is an important addition to the mental health team.

During the study, mental health and primary care providers worked together, but improvements could be made to increase collaboration between providers to improve the care for patients. The RN consultation liaison coordinator attempted to increase collaboration by speaking with participants about coordination of care in the initial session and encouraging follow-up with providers in subsequent sessions. Collaborative interventions have demonstrated improved outcomes for patients with anxiety and are just as cost effective as other methods of patient management [23]. Improvements in this study are directly linked to collaboration. For a community such as St. Bernard that has compounded disasters, it is important that mental health and primary care providers employ whatever roles are necessary to fulfill community needs [24].

Conclusion

Lessons to be learned are far reaching for the St. Bernard community, as well as other areas affected by disasters. The success of the RN consultation liaison indicates the need for a permanent consultation liaison at mental health care facilities. During the intervention sessions, mindfulness had an effect of empowering participants to deal with anxiety. The mindfulness sessions gave participants tools to help themselves through difficult times in the future. Education, which can be effectively presented by nurses, are important aspects of the intervention sessions. One-on-one, or group, sessions are effective activities to give primary care and mental health providers and their patients new ways to address the difficult problem of anxiety. These combined efforts, with the RN as the coordinator, can not only foster better collaboration among health care providers, but can positively impact clinical practice.

Limitations of this project include small sample size. Considering the difficulty with recruitment of participants and the time necessary to undertake three individual sessions with each participant in the project, the sample of 14 participants was acceptable as an initial study. The use of a non-probability purposive sample is another limitation, but a random sample would not have been feasible. Study results with this sample may not represent the larger population of patients with anxiety. Another limitation was the small number of males in the study and the lack of ethnic diversity within the sample. The study would have been more robust with participants representing other minorities. These limitations decrease the generalizability of findings. Further investigations are warranted to determine the impact of the intervention in other areas affected by natural disasters.

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