Athens Journal of Health & Medical Sciences - Volume 7, Issue 1 – Pages 37-46

Comparing Traditional Cognitive Behavior Therapy with Mindfulness-Based Interventions as a Treatment Option for Anxiety Disorders in Pediatric Patients[1]

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Nearly one in three adolescents meets the criteria for an anxiety disorder (31.9%) according to the National Institute of Mental Health, and it is commonly underdiagnosed and untreated. The use of behavioral therapies such as Cognitive Behavioral Group Therapy (CBGT) and mindfulness-based group interventions (MBIs) is on the raise with more evidence showing the effectiveness of these therapies. The first aim of this review is to assess the effectiveness of an MBI in adolescents with anxiety disorders and chronic illness. The second aim is to look at the differences in outcomes of MBI and standard CBGT in adolescent patients with anxiety disorders. For the first aim, we performed a literature search for studies comparing MBI with CBGT in the treatment of children and adolescents. For the second aim, we assess the effectiveness of MBIs in adolescent patients at our Academic Center by performing a retrospective chart review of the ratings on the SCARED (Screen for Child Anxiety Related Disorders) scale before and after a MBI in 8-week group therapy immediately following CBT. The data was compared to our previous published results from patients who underwent CBT treatment alone. Two out of six participants completed the pre- and post-group session SCARED rating scale. This was due to the high dropout rate, which is not uncommon for group therapy. There was an overall decrease in total anxiety scores in the MBI group in our limited sample size compared to CBT group results previously reported. A major limitation of our study is a high dropout rate not uncommon in this patient population. Additional studies comparing these two treatments are needed, especially considering limited available literature comparing these two therapy approaches.

Keywords: *Mindfulness, Chronic illness, Children and adolescents, Anxiety, Cognitive behavioral therapy*

Introduction

More than one-third of adolescents in the United States have at least one lifetime mental disorder and one-lifetime physical illness with anxiety being the most prevalent mental health disorder (Tegethoff 2015). A recent international systematic review found that prevalence rates of anxiety disorder in chronic

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https://doi.org/10.30958/ajhms.7-1-3 doi=10.30958/ajhms.7-1-3

medical health conditions affect 20% to 50% of children and adolescents (Cobham et al. 2019). Chronic illness is considered a health issue that is not yet curable and lasts around three months, affects a child's activities and requires frequent hospitalizations, which can lead to home care and vast health care needs (Mokkink et al. 2008). Advances in medical outcomes including early detection and diagnosis have led many children and adolescents to live and cope with chronic illness. Children and adolescents with chronic illness cope with school absenteeism, medical procedures, multiple hospitalizations, drug interventions and restriction of usual activities. In a seminal article on cognitive coping strategies, within a year of treatment, some of these children, developed skills in problem-solving and emotional regulation and were able to manage their illness leading to higher confidence and improved self-esteem (LeBlanc et al. 2003).

The leading theoretical scheme of stress and cognitive appraisal proposes that not all children are able to cope with stressors or develop cognitive appraisal, the main cognitive process that mediates the stress reaction (Lazarus and Folkman 1984). According to a meta-analysis of 332 studies, children with chronic illness compared to healthy peers have elevated levels of anxiety with the highest being in those with chronic fatigue syndrome, epilepsy, migraine/tension headaches, and sensory impairment (Pinquart and Shen 2011). An increased rate of behavioral problems in children and adolescents with chronic illnesses suggests that dysfunctional cognitive strategies such as catastrophizing are used to cope. This finding corresponds with a major cross-sectional study on chronic illness in which anxious anticipation, avoidance, worry, rumination and fear of consequences were used by children and adolescents as main coping strategies (Olson et al. 1993).

Literature Review

Cognitive behavioral therapy challenges dysfunctional coping strategies. In a review of psycho-educational interventions, cognitive behavioral strategies lead to higher effectiveness in adaptation of chronic illness and improved outcomes in children and adolescents with chronic illnesses, which were maintained at a year follow up (Barlow and Ellard 2004). In the Op Koers trial (in English: On Track), children and adolescents with chronic illness were taught active use of cognitive behavioral strategies aimed at improving self-management, social competence and positive thinking (Scholten et al. 2011).

Coping strategies tend to be equal in both healthy peers and those with chronic illness since common experiences such as bullying and feeling isolated are shared among youth (Olson et al. 1993). Chronic illness is conceptualized as a whole and not under specific diagnostic categories (Barlow and Ellard 2004). Similar to a multicenter randomized controlled trial, which examined cognitive behavioral based group interventions for children and their parents (Scholten et al. 2011), our study grouped chronic illnesses under one general category.

Although cognitive behavioral therapy is the most evidence-based psychotherapy known to reduce symptoms of anxiety (van den Brink et al. 2016), there are few studies examining chronic illness and anxiety in children. In a pilot

study of nine children displaying a disease specific diagnosis of inflammatory bowel disease and anxiety, 88% were treatment responders while half showed no signs of anxiety after treatment intervention (Reigada et al. 2013). Another study with children with anxiety and epilepsy utilized computerized cognitive behavioral therapy as an intervention. While the study showed a reduction in anxiety at the end of the intervention, it also showed an overall reduction in total problematic child behavior on the Child Behavioral Checklist (Blocher et al. 2013). In a systematic review of psychological interventions, only one study utilized group cognitive behavioral therapy matching controls of children with anxiety and asthma and children with anxiety alone, showing a significant reduction in the clinical global impression scale (Bennett et al. 2015).

Unlike cognitive behavioral therapy which is mostly individual based interventions, mindfulness is generally taught in groups (Thompson and Gauntlett-Gilbert 2008). Mindfulness can be defined as "paying attention in a particular way: on purpose in the present moment, and nonjudgmentally" (Kabat-Zinn 1994). It differs from cognitive behavioral therapy in that it recognizes problematic thoughts without changing them. Mindfulness based therapy is a mode of acceptance and awareness of thinking in contrast to cognitive behavioral approaches that challenge the content of thoughts (Thompson and Gauntlett-Gilbert 2008). Mindfulness based strategies lend to engagement and group cohesion in children and adolescents (Wagner et al. 2006). It leads to sharing experiences in which members can learn and support one another (Semple et al. 2006).

Mindfulness based interventions include meditation-based strategies such as nonjudgmental diaphragmatic breathing with focused attention, self-regulation of emotions and general self-awareness. These strategies are associated with a reduction in stress and negative emotions, improvement in patient attitude, health-related behavior and coping skills in individuals with diabetes (Priya and Kalra 2018). Only one pilot study in mindfulness meditation showed efficacy with improvement mood and quality of life as reported by parents in a group of adolescents. It also leads to a reduction of inflammatory factors: IL-1 B, IL-6 and TNF-alpha levels (Sansone et al. 2018).

An electronic database search on Medline OVID and PubMed showed no published studies as to the addition of mindfulness meditation-based strategies to cognitive behavioral therapy in children and adolescents with anxiety and chronic illness making our study unique. The estimated lifetime prevalence of anxiety disorders in children is 31.9% (Merikangas et al. 2010). If left untreated, it can have a negative impact on a child's life (van Beljouw et al. 2010). Children and adolescents with chronic illness face many of physical and emotional challenges after diagnosis and during treatment. Children with chronic health conditions are at an increased risk of depression and other mental health problems later in life.

Objectives

The first objective of this study was to assess the effectiveness of a Mindfulness Cognitive Behavior Therapy Groups for children and adolescents with an anxiety disorder and chronic illnesses and/or Tourette syndrome. Due to

the small sample size of the group who responded to recruitment there was no patient in the group with Tourette syndrome. The group consisted solely of children and adolescents with anxiety and/or chronic illnesses.

This research study attempted to compare outcomes from a previous published study by Scales et al. (2018) where Cognitive Behavior Therapy groups were offered to determine the effectiveness of CBGT sessions for children and adolescents with Social Anxiety Disorder (SAD) and Generalized Anxiety Disorder (GAD) to the Mindfulness group therapy for children with anxiety and chronic illness

The second objective aim was to perform literature searches and identify the publications comparing Mindfulness with Cognitive Behavioral Therapy for treatment of children and adolescents with the focus on children with anxiety and chronic illness.

Methodology

This study was approved by the Institutional Review Boards of Penn State Milton S. Hershey Medical Center and Penn State College of Medicine.

Eligible subjects were identified through Hershey Medical Center's electronic database of patient files by searching for a group therapy session between. We performed a retrospective chart review of the ratings on the SCARED (Screen for Child Anxiety Related Disorders) scale before and after a mindfulness based intervention in 8-week group therapy. Specifically, a mindfulness deep breathing exercise was performed by participants with the therapist directing to take a deep breath by breathing in through the nose and out through the mouth and letting go of any thoughts.

The control group was from previously reported study by Scales et al. (2018) where patients were included in the study if they were between the ages 6 to 18 years, had a primary diagnosis of SAD or GAD or any other anxiety diagnosis. Patients from both groups were enrolled in the Penn State Hershey Psychiatry cognitive behavioral group therapy in the time frame 07/2016-06//2018 and had completed pre- and post-analysis of SCARED.

The diagnosis of an anxiety disorder was determined by clinical interview by child and adolescent psychologists or therapists based on Diagnostic and Statistical Manual of Mental Disorders (DSM V).

Electronic database searches were conducted by using PubMed, and Medline OVID utilizing keywords: chronic illness, children and adolescents, anxiety, cognitive behavioral therapy, mindfulness.

Procedures

Child self-report

SCARED, Screen for Child Anxiety Related Emotional Disorders, was the primary tool used to determine improvement in anxiety levels amongst the participants. SCARED is a 41-item standardized self-reporting tool that was

developed for children and adolescents as well as for parents to screen for anxiety disorders, including General Anxiety Disorder, Separation Anxiety Disorder, Panic Disorder, Social Phobia, and School Phobia (Birmaher et al. 1999). Responses to the 41 items are summed up into a composite score and scores on individual anxiety subscales (Birmaher et al. 1999). A composite score of 25 or greater indicates the presence of an anxiety disorder (Birmaher et al. 1999).

Participants completed a self-report SCARED both on the first and last day of the group and documentation was uploaded into the Electronic Medical Record (EMR). Pre- and post-analysis of SCARED from the participant was obtained from the medical record. Identifiers were destroyed upon retrieval of the data from the medical record and reviewed.

Results

To determine if Penn State's Pediatric Psychiatry CBGT for Generalized Anxiety Disorders was effective in lowering anxiety scores, we attempted to compare information between the pre- and post- SCARED using t-tests. Due to a high number of participants with chronic illness and anxiety who did not attend the last session to fill out the SCARED or dropped out, statistical analysis could not be performed or compared with the control group previously reported (see Table 1 for sample characteristics and size). This finding tends not to be uncommon for group therapy interventions especially when working with children and adolescents who are either highly anxious and/or live life with a chronic illness given its impact on their overall quality of life socially, emotionally and behaviorally.

Results for the CBGT group were limited given the small sample size. For both participants, there was either a significant self-reported decrease in overall anxiety from pre and post or no change at all. For participant 1, the pre- SCARED score was 9 and the post- SCARED score was 2. For participant 2, the pre-SCARED score was 24 and the post- SCARED score was 25 (Figure 1).

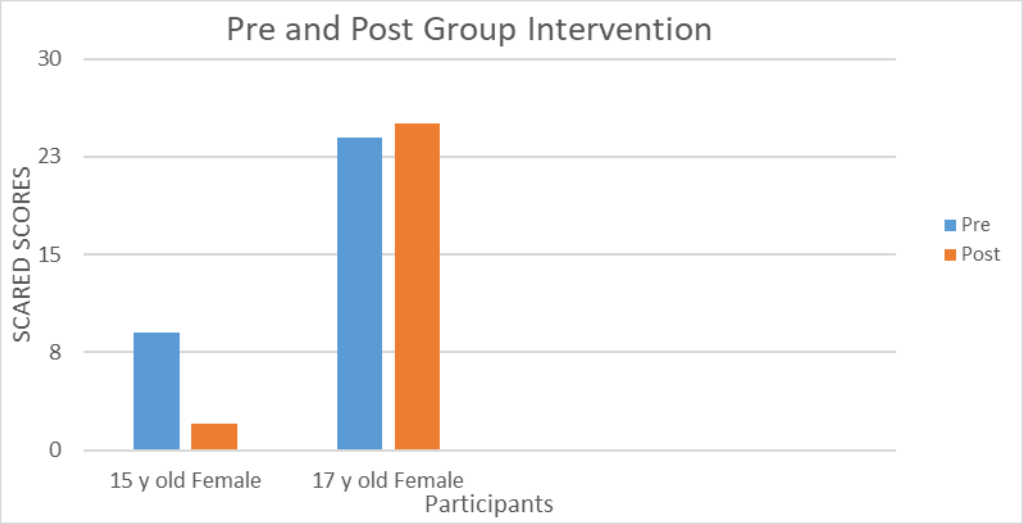
Discussion

The literature review showed a limited number of studies comparing these two treatments. In this study, two participants-maintained attendance throughout the seven sessions. Four participants dropped out of the study. One participant with severe anxiety (pre-session SCARED: 34) attended only four sessions which could have impeded his participation and another one did not meet inclusion criteria for an anxiety disorder.

Table 1. *Characteristics of Participants in Mindfulness Based Intervention Group*

Age	Sex	Number of sessions attended	Diagnosis	Pre-session SCARED	Post-session SCARED	Outcome
15	Female	7	Psychological factors affecting medical conditions	Total Score: 9 Meaningful subscales: *Social Anxiety:* *8 (clinical range)*	Total Score: 2 Subscale scores: *Social Anxiety: 2*	Participated
10	Male	0	No anxiety diagnosis	Did not attend	Did not attend	Did not meet diagnostic criteria for participation
16	Male	4	Generalized Anxiety Disorder	Total Score: 34	Did not attend	Dropped out of study
17	Female	0	Generalized Anxiety Disorder, Panic Disorder	Did not attend	Did not attend	Dropped out of study
15	Female	4	Generalized Anxiety Disorder	Total Score: 17	Did not attend	Dropped out of study
17	Female	7	Generalized Anxiety Disorder	Total Score: 24 Meaningful subscales: *Panic Disorder:* *8 (clinical range)* *Social Anxiety:* *8 (clinical range)*	Total Score:25 Meaningful subscales: *Panic Disorder:* *8 (clinical range)*	Participated

Figure 1. *SCARED Scores of Active Participants*



Another factor for the high dropout rate was that the study was held during the summer vacation months of the participants, which could have conflicted with personal schedules.

Our findings for the CBGT control are favorable showing a significant decrease in overall anxiety for most participants and no worsening of anxiety in the remaining participants as determined by pre- and post- intervention anxiety scores.

Our experimental group had a smaller sample size compared to participants who fully completed four or more sessions in our previously published control group. The experimental group also did not complete pre- and post-SCARED documentation within the EMR due to very high dropout rate and non-completion of the final SCARED in the study group that prevented us from being able to perform a meaningful statistical analysis. The experimental mindfulness group will have to be repeated in order to draw any conclusions about the effects of treatment compared to traditional CBT.

The 8-week-therapy groups addressed chronic illness and anxiety disorders in a psychiatric setting at Penn State Hershey. These sessions could have been held at a main medical setting to reduce stigmatization with psychiatric disorders and improve attendance and retention. Attrition rates of children and adolescents in group therapy are high in similar populations and not uncommon for group therapy interventions. Due to the high impact of chronic illness in overall quality of life and medical complications, children and adolescents are impacted socially, emotionally and behaviorally.

Conclusions

Mindfulness based interventions are part of a new wave of group psychotherapeutic interventions to treat a variety of individuals with anxiety

whether they have anxiety or anxiety with comorbidities such as chronic illnesses as examined in our present study.

Even given our limited sample size due to the high dropout rate again not uncommon in such groups we were still able to see in our two participants who completed the pre and post testing (a decrease in one of the participants' level of anxiety pre and post group intervention. We believe that will a larger participant base our findings would be even more robust for this population that we examined. That is a future goal of our work.

Acknowledgments

The authors would like to acknowledge Dr. Sujatha P. Koduvayur for her help with manuscript preparation.

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