Original Research

The Effectiveness of Adjunctive Mindfulness Therapy with a Unified Protocol on the Emotional Disorders and Sleep Problems of Adolescents

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Abstract

Background and Objective: The results of different studies have indicated the comorbidity between emotional disorders and sleep problems. However, no study has compared the outcome of mindfulness and unified protocol on the emotional problems and the sleep quality of the adolescents with emotional disorders.

Materials and Methods: The current investigation was a quasi-experimental study with a control group, which was conducted in 2019. The participants included adolescents with emotional disorders in control (n = 15) and experimental (n = 16) groups. Both groups received 14 sessions of therapy. The assessments were performed in three stages: pre-test, post-test, and follow-up. The measurements included the Pittsburgh Sleep Quality Index (PSQI) and the Screen for Child Anxiety Related Disorders (SCARED).

Results: The mean age of the participants in the experimental and control groups was 13.06 and 13.05 years, respectively. Given the results, both treatments alleviated the sleep and emotional problems of the adolescents diagnosed with emotional disorders. However, the combined treatment of mindfulness and the unified protocol led to more improvements. The calculated effect size of this treatment was 0.21 for sleep quality and 0.24 for the SCARED questionnaire.

Conclusion: Based on the findings, utilizing mindfulness as a supplementary therapeutic method can enhance the chances of reductions in the emotional problems and the improvements of sleep quality in the adolescents with emotional disorders.

Keywords: Unified protocol; Emotional disorders; Sleep; Mindfulness

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Introduction

Anxiety disorders are highly prevalent among children and usually co-occur with emotional disorders and symptoms, especially depression (1, 2). The findings of many studies indicate the high comorbidity between anxiety disorders and depression among children and adolescents. On the basis of the results of an investigation, 16-62 percent of the adolescents are simultaneously diagnosed with anxiety disorders and depression (3). Emotional disorders can lead to significant impairments and poor therapeutic outcomes and include mood and anxiety disorders (4, 5).

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In addition to the comorbidity between anxiety disorders and depression, the studies have shown that these complications are usually accompanied by sleep problems. Aside from this simple comorbidity, anxiety disorders and depression have mutual risk factors and developmental pathways (6-9). On the other hand, the findings suggest that targeting the mutual fundamental factors of emotional disorders can improve the prevention of depression in adolescents who suffer from anxiety disorders (10).

For this reason, psychological treatments have focused on trans-diagnostic protocols instead of diagnosis-based therapies (Therapies that target a single disorder such as major depression, generalized anxiety, etc., basically). Because the diagnosis-based treatments such as cognitive-behavioral therapy (CBT) have been reported to be practical and useful in investigations, these therapies face clinical and financial problems, high relapse occurrence, and slow response to treatment as a result of the comorbidity between emotional disorders (11).

However, the trans-diagnostic approach for children and adolescents has been designed by focusing on a set of core modification principles in the range of emotional disorder treatment (10); in a way that this treatment targets the different disorders and their mutual factors simultaneously (12). Research has shown that participants who receive this treatment, significantly improve in terms of clinical symptoms' intensity, anxiety, and depression (10, 13). One of the trans-diagnostic protocols is unified protocol. This protocol has been designed in order to promote healthy coping behaviors and foster a stronger sense of control within those suffering from emotional disorders (14).

Another therapy that is utilized for improving the psychological symptoms of the clients is mindfulness. Mindfulness is defined as a non-judgmental state, and a present-focused awareness of the internal and external stimuli (15). Despite the fact that most of the studies on mindfulness have been carried out on adults, utilizing it for children and adolescents is on the rise (16, 17). Even though many investigations have focused on the effectiveness of mindfulness and trans-diagnostic treatment on children and adolescents, to the best of our knowledge, no study has yet examined the effectiveness of mindfulness and trans-diagnostic treatment on sleep quality of the adolescents. Moreover, no research has been previously conducted to compare the effectiveness of these two therapies on emotional problems of the children who suffer from emotional disorders. Therefore, the aim of the current study was to compare the effectiveness of mindfulness as a supplementary therapy with the trans-diagnostic treatment on the sleep quality problems, anxiety, and depression of the adolescents with emotional disorders.

Materials and Methods

Participants: The current study included 61 clients (12-17 years old) who were allocated to the experimental (n = 16) and control (n = 15) groups after screening (Figure 1). Each study participant was coded with a number after enrolment. The sample was divided into two groups with a computerized random number generator, using the permuted block randomization method. After beginning the treatment, one participant from the control group and two participants from the experimental group did not continue the treatment due to the lack of accessibility, and therefore did not complete the post-test and follow-up assessments. Furthermore, one participant in the experimental group did not complete the follow-up assessments because of emigration.

The patients were diagnosed with emotional disorders and their frequencies of diagnoses at pre-treatment baseline are presented in table 1.

Table 1. Frequency of disorders

Diagnosis	Comorbid diagnoses [n (%)]	Principal diagnosis [n (%)]
GAD	4 (13.33)	6 (19.35)
Social phobia	3 (10.00)	5 (16.12)
MDD	4 (13.33)	3 (9.67)
OCD	2 (6.66)	2 (6.45)
Unspecified anxiety disorder not otherwise specified	7 (14.81)	5 (16.12)
Panic disorder	1 (3.33)	2 (6.45)
Specific phobia	5 (16.66)	3 (9.67)
Dysthymic disorder	2 (6.66)	2 (6.45)
PTSD		3 (9.67)
ADHD	2 (6.66)	

GAD: Generalized anxiety disorder; MDD: Major depressive disorder; OCD: Obsessive-compulsive disorder; PTSD: Posttraumatic stress disorder; ADHD: Attention-deficit/hyperactivity disorder

At the beginning of the therapy, the clients were assessed using the diagnostic interview for the anxiety disorders and based on the reports of the clients and a parent.

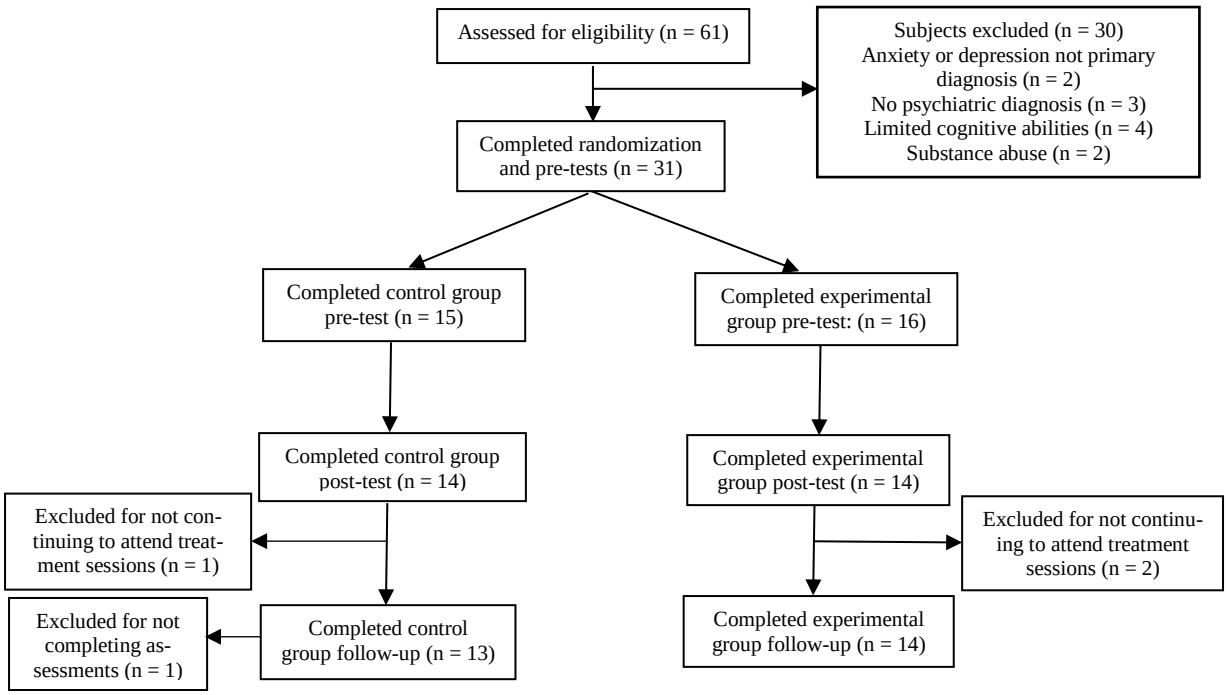

Figure 1. Diagram illustrating number of participants in pre-test, post-test, and follow-up phases

The only clients who were diagnosed with anxiety disorders, depression, and the disorders in which anxiety was a main factor [obsessive-compulsive disorder (OCD), posttraumatic stress disorder (PTSD)] were included in the study. Most of the clients were diagnosed with a comorbid emotional disorder in addition to their main disorder. Since this intervention was supposed to be performed on adolescents, the adolescents included in the study were the clients who only themselves were diagnosed with anxiety disorders (not their parents). The clients with parents suffering from clinical disorders were referred to other therapy programs. They received other therapies such as CBT, family therapy, acceptance, commitment therapy, etc.

Procedure: This study was a quasi-experimental clinical trial with a control group and an experimental group and was conducted with a permission from Kermanshah University of Medical Sciences, Kermanshah, Iran (Ethics approval code: IR.KUMS.REC.1397.178). The participants referred to Farabi Hospital with their parents or caregivers for recruitment to the program. Before beginning the program, caregivers and children both signed informed consent forms. The only therapy offered to the control group was Barlow's Unified Protocol for Emotional Disorders in Adolescents (18), whereas members of the experimental group attended the same program and were also assigned to read a self-help book called "Sitting Still Like a Frog: Mindfulness Exercises for Kids (and Their Parents)" by Eline Snel (19). The participants were assessed at the pre-test, post-test, and follow-up phases. Measurements were conducted before beginning the sessions, after finishing the sessions, and two months after the end of the program. Before starting the intervention, the participants were assessed using the Diagnostic Interview Schedule for Children (DISC-IV). Teenagers were only included in the study if they were diagnosed with anxiety disorders, depression, or disorders in which anxiety was a main component (OCD, PTSD). The exclusion criteria were parent or child unable to read or comprehend the Farsi language while participating in the sessions or completing the questionnaires, being diagnosed with schizophrenia, pervasive developmental disorders (PDD), bipolar disorder type I or II, or any other disorder which prevented the child from understanding the session content or the questionnaire, suicidal or homicidal ideation, and teenagers whose parents had a history of severe mental illnesses such as psychosis.

Interviews were conducted by a MA psychology student. The intervention was administered by a psychology student who was trained for the program in workshops run by a faculty member who

had translated several third wave psychotherapy books. Additionally, before each session, the session content and the skills needed were reviewed by the supervisor to ensure that the psychology students conducting the sessions met the requirements. During the intervention, the students were observed by the supervisor from behind a one-way mirror.

Intervention: The transdiagnostic treatment administered was based on the Ehrenreich protocol for adolescents (20). The adolescent treatment protocol involves provoking emotion and reinforcing emotional tolerance through presentation of situational, internal, and somatic cues (21). This book contains nine chapters: motivating; identifying emotions and behaviors; introducing emotion-focused experiments; awareness of sensations; flexibility; awareness of emotions; exposure to emotions; reviewing achievements and planning for the future; and improving parenting style for an emotional adolescent (Table 2). The treatment was performed as group therapy over 14 sessions. The additional mindfulness treatment which was chosen for this experiment included the book "Sitting Still Like a Frog: Mindfulness Exercises for Kids (and Their Parents)" by Eline Snel (19). This book consists of mindfulness exercises which are tailored for teenagers and children. The book was given to the experimental group.

Tools

Pittsburg Sleep Quality Index (PSQI): This scale consists of seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The respondents with PSQI > 5 are considered to have poor sleep quality (20). A validated and reliable Persian version of this questionnaire was applied (22).

Diagnostic interview for children and adolescents (DICA): This scale can be used in structured or semi-structured form. The DICA is suitable for children aged 6 to 17 years old and takes about an hour or two to complete. The scale covers diagnostic categories such as externalizing behavior disorders, anxiety disorders, depressive disorders, substance abuse disorders, etc. (23).

Screen for child anxiety related disorders (SCARED): The SCARED is a 41-item questionnaire to assess the youth's anxiety symptoms during the past 3 months. The psychometrics forth SCARED include validity data for children in the age range of 7-19 years (24). The SCARED has moderate to strong internal consistency (IC) (α = 0.74 to 0.93), test-retest reliability (IC ranging from 0.70 to 0.90), and moderate parent-child agreement (25, 26).

Statistical analysis: In the descriptive statistics section, the mean, frequency, percentage, and standard deviation (SD) were reported. In the inferential statistics section, repeated measures analysis of variance (ANOVA) was used. Before applying the repeated measures ANOVA, some preliminary assumptions were verified using the Box's M test, Mauchly's test of sphericity, and Levene's test.

Results

The demographic characteristics of the subjects are presented in table 3.

Table 2. Summary of transdiagnostic treatment protocol

Module	Topic	Content
1	Motivating and keeping motivation	Building a friendly environment, conversation about the key issues and goal setting, motivating the teenager to change
2	Identifying emotions and behaviors	Teaching about emotions and their target, introducing the three parts of each emotion, introducing the cycle of avoidance and other emotional behaviors
3	Introducing emotion-focused behavioral experiments	Introducing the opposite action technique and behavioral experiments, recording emotion levels, emotion-focused behavioral experiments
4	Awareness of bodily sensations	The relationship between intense emotions and bodily sensations, increasing the awareness about bodily sensations, exercises about sensory exposure
5	Flexibility in thinking	Increasing flexible thinking ability, introducing the common cognitive distortions, relating thoughts and behaviors accompanied by problem solving and detective thinking
6	Awareness of emotions	present moment awareness, introducing and practicing non-judgmental awareness, general emotional exposure
7	Exposure to situational emotions	Reviewing the skills learnt previously, discussing the rationale of exposure to situational emotions, exposure to situational emotions
8	Keeping achievements	Reviewing the skills and moving forward to future goals, designing a recurrence prevention program
Parents	Improving parenting style for an emotional adolescent	Informing parents of the proper ways of reacting to the teenagers' distress, introducing four common parenting techniques about emotions and their opposites

Table 3. Demographic characteristics of the subjects

Parameters	Experimental group	Control group
Age (year) (mean ± SD)	13.06 ± 0.96	13.50 ± 1.09
Gender		
Male	9 (56.25)*	10 (62.66)
Female	7 (43.75)	5 (33.33)
Education		
First grade of secondary school	6 (37.50)	5 (33.33)
Second grade of secondary school	4 (25.00)	3 (20.00)
Third grade of secondary school	6 (37.50)	7 (46.66)

*Data are presented as n (%)
SD: Standard deviation

Given the analyses, the demographic characteristics of the participants of the two groups had no significant difference. The mean age of the experimental and control groups were 13.06 and 13.50 years, respectively.

Table 4 shows the mean and SD of the dependent variables in the pre-test, post-test, and follow-up stages. The results showed that there was no statistically significant difference between the two groups in the pretest ($P > 0.05$)

Table 4. Mean and standard deviation (SD) of the study variables

Variable/Group	Pre-test	Post-test	Follow-up
SCARED			
Experimental	28.27 (1.38)	20.50 (0.85)	21.50 (1.09)
Control	27.38 (1.66)	23.0 (1.87)	23.84 (1.72)
PSQI			
Experimental	9.57 (3.81)	5.07 (2.73)	5.02 (2.07)
Control	11.38 (1.80)	7.92 (2.75)	7.76 (2.61)

SCARED: Screen for Child Anxiety Related Disorders; PSQI: Pittsburgh Sleep Quality Index

Table 5 indicates that the Unified Protocol for Emotional Disorders in Adolescents (UP-A) significantly changed the variables of SCARED and PSQI. These changes were significant and persistent over time. Based on the results of the table, the between-subjects partial eta for SCARED and PSQI was 0.25 and 0.21, respectively.

Additionally, the results of the Bonferroni's pairwise comparison analysis of variables indicated that in the experimental group, meaningful changes were observed at pre-test compared to the post-test and follow-up ($P < 0.01$).

Discussion

This study aimed to compare the effectiveness of the UP-A accompanied by mindfulness as a supplementary treatment with the UP-A on the emotional and sleep problems of the clients. The results indicated that both treatments led to reductions in emotional and sleep problems, but the combination of the unified protocol and mindfulness resulted in more significant improvements in both problems. These findings were in line with other psychological interventions which had shown that the unified protocols and mindfulness-based approaches can contribute to alleviations in emotional problems of the adolescents (27-29). In May of 2019, Kennedy et al. compared the effectiveness of The Unified Protocols for Trans-diagnostic Treatment of Emotional Disorders in Children (UP-C) with anxiety-based therapeutic interventions to assess the reductions of anxiety and comorbid disorders' symptoms in a population of 7-13 year-old children. The participants included 47 children who had been diagnosed with at least one anxiety disorder and almost half of whom were depressed. On the basis of the results and post-test assessments, there was no significant difference between the two groups in terms of their rate of improvement for their primary disorder. Therefore, alleviations in emotional disorders had probably occurred for the participants of both groups.

Table 5. Mixed-design analysis of variance (ANOVA) with repeated measures of variables

Variable	Source	Sum of squares	df	F	P-value	Partial Eta
SCARED	Interaction (Time*Group)	35.539	1	30.85	0.01	0.55
	Within-subjects (Time)	579.959	2	248.96	0.01	0.90
	Between subjects (Group)	34.970	1	8.53	0.01	0.25
PSQI	Interaction (Time*Group)	3.081	1	0.997	0.32	0.03
	within-subjects (Time)	293.134	2	71.413	0.01	0.74
	Between subjects (Group)	124.176	1	6.86	0.01	0.21

SCARED: Screen for Child Anxiety Related Disorders; PSQI: Pittsburgh Sleep Quality Index

The same pattern had been observed within the follow-up assessments. So the final findings of the study indicated that UP-C is at least as effective as the empirically supported anxiety-based interventions and that it can even achieve more in variables such as emotional reaction and emotion regulation (30).

The first finding of the current study demonstrated that the unified protocol combined with mindfulness can lead to alleviations in emotional problems of the adolescents. In order to explain this detection, the therapeutic components of the unified protocol and mindfulness could be reviewed. Flexibility, preventing patterns of emotion avoidance, acting opposite to action tendencies for strong emotions, and exposure are a number of the principles of the unified protocol that may have played a therapeutic role in the improvements of the emotional problems. Reappraisals before the emotional situations could reduce the upcoming negative and mental emotions. Therefore, cognitive reappraisals before the emotional events can increase the ability of the individuals to modify and revise their subsequent emotional responses (31).

Moreover, studies have shown that individuals with emotional disorders try to avoid the unexpected stressful emotional experiences which may lead to exacerbations of the symptoms. Instead of suppressing the negative emotions, UP-A encourages the adolescents to accept a range of emotions from anger to anxiety (like the nonjudgmental awareness) and as a result, it reduces their emotional problems (32, 33). In addition, the emotional problems could be improved by the mindful exposure and avoiding the tendency to respond to the experiences and the cognitive reappraisal of the aversive stimuli as a momentary and even positive and meaningful phenomenon (34). To explain how mindfulness has played a role in improving the emotional problems, it could be stated that the nonjudgmental awareness, which is the result of mindfulness, facilitates the healthy involvement with emotions and allows the individuals to genuinely experience and express their emotions (35, 36).

In fact, the enhancement of mental health during mindful meditation is partially the result of the modified relationship of the individuals with their experiences and their higher ability in managing them (11). Mindfulness could be identified as a kind of emotion regulation strategy of the cognitive reappraisal. Mindfulness in the best version is known as the efforts for changing the quality of interaction with the emotional perceptions. The process of defining the self-independence from the thoughts and emotions, which is an outcome of mindfulness, will finally occur automatically and effortlessly (37). The individuals will finally be able to stop the interference between their perceptual procedures in all levels; including subconscious levels like appraisal (38).

To explain the second finding -reduction of sleep problems- it could be stated that mindfulness as a supplementary treatment has played and effective role. Based on a recent meta-analysis study in which the effectiveness of CBT on sleep-related anxiety disorders was examined, the sleep problems were persistent among this group of clients (39). For this reason, combining mindfulness, which has been utilized for sleep problems throughout the recent years, has been effective as a supplementary therapeutic method (40, 41). Along with these findings, Mohammadpour et al. have examined the effectiveness of the unified protocol on the adults diagnosed with GAD and comorbid symptoms of sleep problems. Given their findings, the unified protocol was effective only on some of the sleep quality components; such as the subjective sleep quality, and daytime dysfunction has not affected the other components and the total sleep quality score (42).

However, in another investigation about the unified protocol of CBT with mindfulness on sleep problems of patients with multiple sclerosis (MS), it was indicated that by benefiting from mindfulness, this treatment can lead to reductions in sleep problems (43). To explain this finding, it can be mentioned that by learning about mindfulness, individuals will not be judgmental towards their problems and will accept them instead. Mindfulness is defined as an extended attention to the present and an open and nonjudgmental attitude towards any occurring situations. The experiences of the individuals not only include the events happening around them (such as voices, visual experiences, and incidents), but also embrace their internal experiences (bodily sensations, emotions, and thoughts). Therefore, teaching about mindful breathing during the day and before sleep, could enhance sleep quality and mindfulness can train the clients to interact differently with their thoughts and feelings in order to have control over their sleep (41, 44).

The current study was along with several limitations. The first limitation was the sample size; so the findings should be generalized to other adolescents cautiously. Secondly, for assessing the effectiveness of the treatment, we only used self-report questionnaires. Thirdly, the follow-up assessments were performed after two months and this period is short for examining the prospects of relapse occurrence. Therefore, it is suggested that the future studies apply the treatment on larger populations, and they are recommended to utilize more therapist-related scales including magnetic resonance imaging (MRI) and functional magnetic resonance imaging (FMRI) with longer follow-up assessments.

Conclusion

Adjunctive mindfulness therapy with a unified protocol can be used as an appropriate and inexpensive approach to treat emotional problems and sleep quality in adolescents with emotional disorders.

Conflict of Interests

Authors have no conflict of interests.

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