

Effectiveness of Mindfulness-Based Stress Reduction Program and Conscious Yoga on Anxiety and Depression Trait in High School Girl Students: A Pilot Study

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ABSTRACT

Introduction: the present study was conducted with the aim of examining the effectiveness of mindfulness-based stress reduction program and conscious yoga on state and trait anxiety and depression in high school girl students. **Methods:** The study was quasi-experimental with pre-test, post-test, control group and a 2-month follow-up. 24 high school girl students who referred to clinics all of the high school girl students Tehran were selected in an available way and were randomly assigned into experimental ($n_1 = 12$) and control groups ($n_2 = 12$). The anxiety and depression was assessed in pre-test and post-test. Then, participants of experimental group received group mindfulness-based stress reduction program and conscious yoga for 8 sessions. After completing the interventions high school girl students' depression level was measured again and data were analyzed using covariance analysis. **Findings:** Results showed mindfulness-based stress reduction program can significantly decrease depression in high school girl students of experimental group and significantly decrease state and trait anxiety in them. **Conclusion:** The results of this study proposes some evidences that mindfulness-based stress reduction program can be an appropriate therapeutic method for improving quality of life and decreasing state and trait anxiety and depression in high school girl students. So, applying mindfulness-based stress reduction program is recommended to decrease anxiety and depression in high school girl students.

Keywords: *Mindfulness-Based Stress Reduction Program, Conscious Yoga, Depression, State And Trait Anxiety, Girl Students*

Anxiety and depression are the factors that threaten the health of students. Anxiety and depression if too much can make the students feel anger, fear and frustration, and put the physical and mental health of students at risk (Giga, 2001; quoted by Narimani, Hassanzadeh and Abolqasemi, 2012). Test anxiety is a special kind of

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anxiety that has the physical, cognitive and behavioral symptoms of while preparing for the exams and tests and it becomes a problem when the high level of anxiety interfere with preparing for exams and tests (Latas, Pantić, Obradović, 2010). Test anxiety threatens the mental health of students and influences the effectiveness, talent and character formation of their social identity (Ergene, 2003). Test anxiety is considered as a situational anxiety and has two dimensions: cognitive and emotional. Emotional dimension is concerned with the physiological or emotional reactions and is considered as the physiological arousal associated with stress (LeBeau, Glenn, Liao, Wittchen, 2008). Test anxiety was first mentioned and considered in the study of Sarason et al (1960). When the person is concerned rather than focusing on the task, he or she focuses on himself or herself. And even if, he has spent more time than peers on the study, he fails in the test due to a lack of confidence in them and a sense of inadequacy (Johnson, 2007).

The emotional-arousal-aspects of test anxiety are psychological and make the person feel symptoms such tension, apprehension, nervousness, unrest and increased heart rate (Wren, et al 2000; Lowe, 2008). The cognitive dimension describes the distortions and negative thoughts related to their academic ability and intelligence (Alfano, Beidel, & Turner, 2002; Ashcraft, Krause, 2007) Behavioral dimension of test anxiety was considered and developed in line with the cognitive aspect of test anxiety scale in research and development. It then focuses on the skills that affect and alter the autonomous stress response, something that cognitive interventions cannot afford (Vern and Ben Sun, 2004).

The researchers in several studies have been reported and estimated the prevalence of test anxiety in students from 10 to 30%. The estimate for high school students in Iran is 17.2 percent (Abolqasemi et al, 2004). A person with test anxiety feels helplessness and powerlessness and also is not able to control events and their influence. As a result, a person believes that any attempt to succeed in exams is futile and doomed to failure, and if early efforts to overcome the tests obstacles and problems are ineffective, people with test anxiety may be submitted immediately (Abolghasem, Abbasi, 2012).

Depression is common in children with an anxiety disorder (Schiffer, 2005) or associated anxiety symptoms (Biedermann et al, 1995). An estimated 20 to 50 percent of students with depression also have anxiety disorders. Early onset depression is not a transient phenomenon and if factors underlying or continuing it stay without intervention, it tends to have durable and sustainable results and will leave damaging (Richardson, 2005).

The recent studies that have been conducted on the amount of test anxiety have found girls more anxious than boys (Reza Zadeh and Tavakkoli, 2009; Venkatesh and Karimi, 2010; Garss, Kaya et al., 2010; Mahmoud and Iqbal, 2010). Cognitive - behavioral intervention therapy have received strong empirical support in reducing anxiety for affected students (Sud, Sharma; 1990). Several studies have emphasized that cognitive-behavioral approaches are effective in reducing anxiety and increasing academic performance (Spielberger, 1995).

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Mindfulness-based stress reduction program is developed by Kabat-Zinn in Medical Center of Massachusetts University in 1979 (Kabat-Zinn, 2004). It is a kind of structured clinical program. It is one of the therapeutic methods that focuses on the interaction of mind and body and is used broadly in clinics and hospitals around the USA and Europe to help managing the stress and adapting to chronic diseases. It is an 8-week program. Each session lasts about 120 to 150 minutes and mindfulness skills for coping with stress and developing awareness at the present time are taught. It includes thought-related meditations, relaxation and Hatha yoga (Crane, 2009). Mindfulness means paying attention to the present time in a special, purposeful and without judge way (Baer, Krietemeyer, 2006). One of the main goals of this program is to promote health and reduce stress (Lener, 2013). Meditation and mindfulness exercises lead to increase in self-awareness and self-acceptance ability in patients (Carlson, Speca, Faris, Patel, 2007). One core concept of mindfulness training is that individuals be honest to themselves and their feelings. Along with the increase in individuals' ability for mindfulness, they can identify accurately what is happening in their bodies and minds as they are happening around them. Several studies are conducted about the effectiveness of mindfulness-based stress reduction program. Mindfulness-based stress reduction model has shown success in treating cancer (Rahmani, Talepasand, Ghanbary motlagh, 2015) and significant improvement in quality of life, stress symptoms and quality of sleep in patients with breast and prostate cancer (Carlson, Speca, Faris, Patel, 2007). It also showed significant effect in increasing mental clarity, mental health and decreasing physical stress (Davidson, Kabat-Zinn, Schumacher, 2003). In examining the amount of quality of life in individuals who received mindfulness-based stress reduction program for the first time, a study was conducted at the Mayo Clinic. The results showed overall quality of life; psychological, physical, emotional and spiritual well-being; and social activity significantly improved. Also, positive effects on the amount of pain, the severity of pain, the amount of exhaustion, the amount of support from friends and family, and financial and legal concerns were observed. So, a short-term mindfulness intervention significantly improves the quality of life of participants (Rahimia, Talepasand, 2013). In a study, the positive effect of mindfulness-based stress reduction program on stress, anxiety, depression and sleep in patients with Fibromyalgia was reported (Brantley, 2005).

There is a variety of treatments for test anxiety, one of which is cognitive therapy. Ryan and Deci (2000) showed that mindfulness training helps people to modify behavior patterns and negative automatic thoughts and set a positive behavior related to health (Jngyn, 2007). In other words, the mind awareness through lively and vivid viewing experience can make positive changes in happiness and well-being ((Brown, Rayan, 2003). Studies have shown that mindfulness meditation improves the mood and reduces short-term anxiety (Zidane, Johnson, Diamond, David, Kashn, 2010). Mindfulness training influences on depression, anxiety and psychological adjustment (Bohlmnijer, Prynjr, Tal and Ciperch, 2010).

Due to physical and psychological problems that creates anxiety and depression in students and high levels of test anxiety in students and its destructive effects on mental health and academic performance of adolescents, because students' mental health is an important issue for all segments of society as well as the evidence of the effects of mindfulness-based program and yoga on stress disorders and

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psychological problems reduction, the present study aimed to determine the effects of stress therapy through Mindfulness and Yoga based programs on reducing state and trait anxiety and depression in female high school students to answer the following research question: Does the stress therapy program based on mindfulness and yoga reduce test anxiety and state and trait anxiety and depression in female high school students?

METHOD

The population of the study includes all female high school students in Tehran during 2014-2015 academic years. Cluster Sampling was implemented for this study. From among students in five classes, 163 students were assessed in terms of having anxiety and depression and a total of 24 students with high scores of anxiety and depression were selected for random assignment in groups and were divided into the experimental groups (n = 12) and control (n = 12) group, respectively.

Inclusion and exclusion criteria included: being infected with the moderate intensity of anxiety (at least score 10), Depression (intermediate To the top), individuals should not suffer from other chronic diseases, individual should not have the history of neurological and psychiatric disease and hospitalization, individuals should not abuse drugs, individuals should be able to participate in group therapy sessions and individuals should be willing to cooperate in study. Exclusion criteria for experimental group included: Absence of intervention sessions more than two sessions and lack of willingness to continue participating in the intervention sessions. The study was conducted at High school in Tehran by two master clinical psychologists who were familiar enough to the intervention, according to the ethical standards of research such as informed consent and maintaining secrets of participants.

Participants of experimental and control groups completed questionnaires in 3 stages, before intervention(pre-test), after intervention (post-test) and 2 months after intervention(follow-up). Treatment was done in 8 group sessions. Eight intervention sessions of this study were followed based on mindfulness-based stress reduction program (Kabat-Zinn, 1990). And were conducted once a week in 2 hours for participants of experimental group. Participants of control group did not receive any interventions. Due to ethical considerations, at the end of the research, participants of control group were given a CD of yoga practices. A summary of functional instructions of mindfulness-based stress reduction program is presented in table1.

Table1: Summary of functional instruction sessions of mindfulness-based stress reduction program

Session	Topic
First	The introduction of automatic guidance system/ knowing how to use present moment awareness of bodily sensation, thoughts and emotions in reducing stress/practicing eating raisins ² , giving feedback and discussion about the practice/three - minute breathing, giving assignment for next week and distributing leaflets of the first session and CDs of meditation
Second	Re-examining body workout/ giving feedback and discussion about examining

²Object attention training

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Session	Topic
	body workout/ practicing breathing mindfulness meditation/ yoga stretching exercise/distributing leaflets of the second session and CDs of meditation
Third	Having conscious sitting with awareness of breathing(the sitting meditation)/practicing yoga exercises(in the hospital chapel)/ practicing three - minute breathing /distributing leaflets of the third session and video tape of yoga practices
Fourth	Re-examining body workout /practicing exercises related to conscious yoga(in the hospital chapel)/5-minute practicing of “seeing or hearing”/ re-practicing conscious session with awareness of breathing and body/ distributing leaflets of fourth session and CDs of meditation
Fifth	Practicing breathing /re-practicing conscious session(awareness of breathing ,body, sounds and thoughts)/explaining the stress and identifying participants’ reactions to stress/examining awareness of pleasant and unpleasant events on feeling ,thoughts and bodily sensations/practicing conscious yoga exercises/practicing 3-minute breathing /distributing leaflets
Sixth	Practicing conscious yoga/practicing sitting meditation (mindfulness of sounds and thoughts)/distributing leaflets of the sixth session and number4 video tape to participants
Seventh	Practicing mountain meditation/sleep hygiene/ repeating exercises of the previous session/making a list of enjoyable activities/distributing leaflets of the seventh session
Eighth	Examining body workout /overview of program/examining and discussing programs /practicing stone, beads and marbles meditation

Tools

To data collecting the following questionnaires were used.

1. Structured Clinical Interview (SCID)

Was adapted by Frist et al (1997) it is a tool for diagnosis based on four criteria of Diagnostic and Statistical Manual of Mental Disorders (First, Spitzer, Gibbon, Williams, 1997).This tool has two main versions:

1 - Form SCID-I which assesses major psychiatric disorders (axis I in the DSM-IV) deals. This form have been translated and adapted by Sharifi et.al (1384). This interview has good validity and reliability for the diagnosis of mental disorders. This test has been designed based on branching plan and includes some opened questions and one rule-out question which provide opportunity for interview erto be guided in the new fields, based on previous answers of respondents (Marnat,2003).

Bakhtiari's study (1379), Clinical psychology professionals and professors has confirmed the validity of this tool. Test-retest reliability with an interval of one week was 0/95 (Bakhtiar ,2000)

2 - Form SCID-II also assesses personality disorders (axis II DSM-IV). Bakhtiari (1379; as quoted by Kabyrnezhad et al, 1388) has translated and adapted this form (Kabirnzhad, Mahmoud, 1388). Semi-structured clinical interview is used for personality disorders to assess the 10 DSM-IV personality disorders of axis II and was set in 1997. Content validity is approved by using experts’ opinions and test-retest reliability coefficient. Reliability and validity of this tool has been accepted in various studies. In Bakhtiari’s study (1379), the content validity of the translated

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version of the interview was confirmed by three professors of psychology, and test-retest reliability coefficient of the tool with an interval of one week was % 87 (Bakhtiar, 2000).

State - Trait Anxiety Inventory /STAI (Spielberger al et, 1970)

Anxiety is measured using the State - Trait Anxiety Inventory /STAI in this study (Spielberger al et, 1970). Concepts of state and trait anxiety were introduced by Cattell first and then, more comprehensive, by Spielbergez (1970) (Behdani F, Sargolzaee MR, Ghorbani Ismail, 2004). State -Trait Anxiety Inventory that is known as STAI has been applied in studies and clinical activities. This inventory includes separated self-assess scales to measure state and trait anxiety. State anxiety can be considered as a period in a person's life or in other words, its incidence is associated with the situation and is allocated to stressful situations (arguments, loss of social position and security and human health threat) (ghobari benab, 2013).

2. Beck Depression Inventory (BDI)

The questionnaire was developed to assess the severity of depression based on cognitive and behavioral aspects of depression in the early 1960s. This questionnaire included 21 questions four-point Likert scale describing the intensity of a phenomenon (Sadock, 2009). The minimum score on this test is zero and the maximum is 63. The total score is obtained by sum of the scores all the items. The following can be used to indicate the level of overall depression: 0 to 13: no or minimal depression, 14 to 19 mild depression, 20 to 28, moderate depression, and 29 to 63 severe depression (2000). The scale has had high internal consistency in many studies (Sadock, 2009). Several studies have been also conducted in Iran to measure the psychometric properties of these tools. For example, the study of Tashakori and Mehryar (1994) pointed out to the questionnaire's reliability. In other studies Chegini (2002), reported high validity for Beck questionnaire as 0.70 to 0.90 (Azkhosh, 2000).

RESULTS

The collected data and were analyzed using mean, standard deviation, frequency distribution tables and analysis of covariance using statistical software Spss-19 that are shown in the following tables. In this study, 24 female students (12 controls and 12 experimental groups) were studied in the age range of 15 to 17 years old. The average of the experiment group's age was $16 \pm 5/32$ years old and the average of the control group age was $16 \pm 4/56$ years old.

Table 2. Mean and standard deviation of participants' scores in state and trait anxiety and depression

Modality	Experimental Group (n=12)			Control Group (n=12)		
	pre-test	post-test	Follow-up	pre-test	post-test	Follow-up
Depression	12.33±1.49	14.41±1.67	13.08±1.31	13.25±1.86	12.58±1.31	12.65±1.43
State Anxiety	68.08±1.78	46.75±1.71	47.25±2	68.08±2.84	56.41±2.96	58.41±2.96
Trait Anxiety	52.25±3.51	43.08±2.39	44±2.29	25.91±1.78	51.58±2.53	51.83±2.97

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Mean and standard deviation of state and trait anxiety and depression scores of the subjects have been shown in table 2. the repeated measures analysis of variance were used to investigate the effects of mindfulness-based stress reduction and yoga treatment programs in the state and trait anxiety and depression of female students. The results are summarized in Tables 3 and 4.

Table 3: The summary of repeated measures variance analysis to examine the effectiveness of mindfulness-based stress reduction program on Anxiety and depression

	Sum of squares	df	mean of square	F	significance level	Eta square
Trait Anxiety	289.352	1	289.352	80.711	0.0001	0.786
State Anxiety	192.667	1	192.667	44.705	0.0001	0.670
Depression	1.185	1	1.185	0.710	0.409	0.031

Repeated measures analysis of variance was used to assess anxiety and depression in three stages of assessment which showed significant difference between the groups in both state and trait anxiety and depression. The eta-squared values shows the effect of mindfulness-based stress reduction treatment on the state and trait anxiety of the female high school student.

Table 4: The difference between the pre-test post-test analysis of variance on the dependent variables (anxiety and depression) in experimental and control groups

	Modality	Sum of squares	df	mean of square	F	significance level
Group	Anxiety	608.40	1	608.40	178.52	0.001
	Depression	497.02	1	497.02	395.53	0.001
Error	Anxiety	129.50	38	3.40		
	Depression	47.75	38	1.25		
Total	Anxiety	1926.00	40			
	Depression	1575.00	40			

CONCLUSION AND DISCUSSION

Statistical analysis of the results of this stud showed significant differences between experimental and control groups in terms of reducing anxiety and depression in female students after receiving the Mindfulness-based stress reduction program treatment. This result is consistent with previous studies that showed that a socio - psychological intervention can be effective in improving anxiety and depression (Kaviani et al., 2005). Carlson and Spiess's research showed that mindfulness meditation in addition to reducing stress, significantly increase mental clarity, mental health and reduces physical stress. The researchers concluded that mindfulness-based stress reduction program has an important role in the recovery signs and positive results following treatment with the participants (Carlson and Spiess, 2007).

Since the students are anxious to deal with situations test solutions do not work properly, leading to negative ineffective coping responses including social isolation and self-criticism (Bibber, 2003).

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Mindfulness-based stress reduction program seems to encourage people to practice repeatedly focused attention on neutral stimulus targeted on the body and mind awareness to reduce the preoccupation with thoughts of anxiety and concern about the threat and give their mind to remove the automatic transmission. That is, the techniques increases the individual awareness of the present moment experience and they focus more efficiently on the cognitive system and process information to reduce stress and physiological tension of the person (Kaviani et al., 2005).

Mindfulness-based stress reduction program to a group creates mindfulness through meditation and mindfulness exercises to enhance self-awareness and self-acceptance in patients. Mindfulness is not only a technique or technology, but also is described as a way to reduce suffering and extend the availability of positive qualities such as sharpness, insight, wisdom, and compassion (using relaxation training to a broad and strong emphasis on the stress management is a valuable skill that must be used regularly in one's life and comes as part of sustainable individual coping skills. Expressing excitement over all meetings of the program has many benefits in treatments. Presence of mind through self-regulation of attention, emotional and sensory components by the activities of meditation affects the body. Even, yoga as a regular exercise lead to skeletal - muscle strength, flexibility and balance and helps to increase the state of relaxation and awareness (Brantley, 2005).

In explanation, it can be said that when people feel that deep relaxation, they do not care about their awareness of the mind in depth understanding of the meaning and purpose of life itself. And they will clearly understand that peace, love and joy all within itself. He will realize that all the suffering and pain and sorrow in the world is because of denying the inner peace and human understanding as the sources for love and joy. He will realize that the bad feelings are because of uncomfortable learning to see the world through the wrong window. He understands that he has to deepen access to the resources of its own and this not only for himself but for all the people who are around him. It means her life will be beautiful and deep.

It is also a source of comfort and reassurance to patients meets the same people who can learn coping techniques to overcome the problem and its solution. Students with high anxiety when communicating with each other, experience the widespread sympathy for the problems and a supportive environment is provided for the transfer of knowledge. The group of therapeutic agents such as emotional discharge, feeling of acceptance, altruistic, public approval, empathy, replication, duplication, insight, interaction, learning, reality testing, transmission, universal concept and many other factors increase the coping compatibility and create a sense of hope, responding to treatment and reduce anxiety and depression (Rahmani, Talepasand, 2015).

Since the Mindfulness-based stress reduction program focuses on the here and now, the only true thing is in this moment. In the present moment and enjoy the present moment is the most important techniques used in this method of teaching mindfulness and patience (patience means that things tend to appear in their own time, and the desire to stay with everything which occurs at the moment). The patience means to endure the difficulties or a state of tranquility and self-control and developing the view that perceiving the failures of the current situation is helpful to cope with anxiety.

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Mindfulness helps individuals manage their negative emotions better, gain more adaptive coping skills and be able to reassess stressors (for example, consider fighting with the problem as an opportunity to grow, not a threat). In explaining this hypothesis it can be said that what mindfulness does is that individuals are one step away of all the thoughts, both positive and negative. Thoughts are just thoughts and are not facts. Individuals cannot completely control their thoughts. All that can do is that they look at the thoughts, take away from them and stop their spontaneous reaction to them. The more they are able to do that, the more they feel control on it. Therapeutic effects of group mindfulness-based stress reduction program increases by group-related factors.

In the mind of a person with knowledge of the heart and the heart is open to all thoughts and let the emotions and habits and reactions to be shown freely. At the same time they do not stick with their own thoughts and feelings and ideas and imagination. That is, they are not seeking to find identity according to the viewpoints of the other people. For the conscious mind imagination is one thing and reality is another thing, and imagination is not necessarily reality. Mindfulness helps them better manage their negative emotions, learn more adaptive coping skills and be able to re-evaluate stressors (e.g., defining the problem as an opportunity for growth not a threat). Applying relaxation training broadly and high emphasis on it as a valuable stress management skill should be regularly used in individuals' life and be a sustained part of individuals' coping skills. Expressing emotions during all sessions of the program has treatment benefits. Mindfulness affects emotional and sensory components of the body by self-regulating attention through meditation. Regular practice of Hatha yoga increases skeletal – muscular flexibility and helps the individual to experience deep states of relaxation and awareness. Since, mindfulness-based stress reduction program emphasizes on here and now, 'the present' time is the only true thing. Being in the present time and enjoying it is the most important technique applied in this method. Mindfulness training, patience (patience means having a tendency to make things appear in their own time and having tendency to stay with what is happening at the moment).

Another thing that mindfulness does is to step away from negative and positive thoughts. Thoughts are thoughts that are not true. One cannot completely control their thoughts. Everything they can do is to look at their thoughts away and stop spontaneous reaction to the thoughts. The more they can do this, the more they feel in control of it. Mindfulness-based stress reduction program efficacy as a group increased by factors related to the group and increased the coping compatibility, creating a sense of hope and responding to treatment and therefore health outcomes are more affected (Arch, craske, 2010).

Given that this research has been done on female students who have very different social and family backgrounds, some limitations have been imposed on the generalizability of the findings, interpretations and attributions of the variables which must be addressed. Therefore, it is suggested that further research be done on the more homogeneous statistical community in terms of family and social situations. According to the results, it is recommended to use Mindfulness-based stress reduction program and yoga in order to reduce the level of state and trait anxiety and depression in students.

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