



Impact of Mindfulness-Based Stress Reduction (MBSR) on Students' Social Anxiety: A Randomized Controlled Trial

Hong Ye

ABSTRACT

The purpose of this study was to examine the effects of a Mindfulness-Based Stress Reduction (MBSR) program on reduced stress and perceived anxiety. 27 students with social anxiety, aged 16–40 years, from a China university were randomized to MBSR with routine care group (MBSR group, n = 14) and routine care group (non-MBSR group, n = 13). As expected, an increase in anxiety symptoms during the social situations led to more perceived anxiety in the non-MBSR group, but not in the MBSR group, due to the MBSR program. However, the MBSR group had significantly decreased anxiety and avoidance symptoms compared to the non-MBSR group. The results in this trial show that MBSR can protect students with social anxiety from an increase in perceived anxiety during the social situations.

Key Words: Mindfulness-Based Stress Reduction (MBSR), Social Anxiety, Reduced Stress, Intervention

DOI Number: 10.14704/nq.2017.15.4.1134

NeuroQuantology 2017; 15, 4:101-106

101

Introduction

Social anxiety is an anxiety disorder that is appeared with fear or anxiety about individual social situations exposed to others. Also, it is a chronic disease with a gradual and early onset during adolescence that leads to plenty of suffering and disability (Stein and Stein, 2008). It is one of the most common anxiety disorders in clinical specimen (Carré *et al.*, 2013) and a highly debilitating disorder that can disrupt social communication, academic achievement and well-being (Furmark, 2002). People with social anxiety disorder almost always experience anxiety symptoms (palpitations, tremors, sweating, gastrointestinal upset, diarrhea, muscle tension, and blush) in social situations (Beard and Amir, 2008).

Epidemiologic studies show that the prevalence rate is 19-33% in adolescents and young people

and 3-13% in adult population (Polo *et al.*, 2011). People with social anxiety disorder who think are stupid or clumsy underestimate their talents. On the other hand, they are a perfectionist and believe that others expect a great performance by them. Some studies, in addition to risk factors such as childhood and adolescence troubles, refers to family problems such as the lack of intimate relationships with parents, conflicts with parents, and frequent movements (Brook and Schmidt, 2008; Bejarpas and Soleimani, 2017). Psychological data show that the parents of people with social anxiety are neglectful, rejectionist, or on the contrary, excessive supporter compared to other parents. Various studies have been proposed as effective therapies for social anxiety (Foa, 2006), therapeutic methods such as medications and cognitive-behavioral methods that are empirically

Corresponding author: Hong Ye

Address: School of Physical Education, Shihezi University, Shihezi, 832002, China

e-mail ✉ 1372767186@qq.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 05 October 2017; **Accepted:** 30 November 2017



verified (Tabatabaei *et al.*, 2017; Farhan and Haleem, 2016), One of these therapies is the Mindfulness-Based Stress Reduction (MBSR). Mindfulness means paying attention to a particular way, focusing on the goal in the present and without judgment (Lakhan and Schofield, 2013; Jaipal *et al.*, 2015). In Mindfulness, the individual learns to be conscious of his state of mind at any given moment and focus his attention on his various mental ways. Mindfulness means the attention of pure reality without explanation (Silananda, 1995). The MBSR method is based on relaxation techniques and focusing on the present, which leads to anxiety management and reduction (Santorelli, 2015). The method is beneficial in the structure of traditional medicine and for a wide range of people with chronic stress-related disorders.

One of the consequences of mindfulness practice is that people find that most of the senses, thoughts and emotions have a fleeting fluctuation (Munoz *et al.*, 2016). The impact of psychological interventions shows that the interpretive styles of individuals are flexible; in fact, cognitive education not only changes interpretations, and it also modifies emotional and cognitive symptoms in anxious individuals. Over the centuries, mindfulness has proven to reduce pain and suffering and improve emotional and cognitive symptoms, and increase welfare and reduce anxiety (Yang *et al.*, 2015; Lakhan SE, Schofield, 2013; Shankar *et al.*, 2016). Studies show that mindfulness improves life quality and effective coping skills use (Tharaldsen KB, Bru, 2012).

Mindfulness emphasizes the presence in the present without interpreting and judging the signs related to disorders (Santorelli, 2014). One of the functions of mindfulness is to increase self-regulation skills in a person that involves controlling emotions and cognitive aspects of social situations (Keng *et al.*, 2011; Ullah *et al.*, 2016). According to the Friedela *et al.* (2015) study, self-regulatory activities relate to the front of the brain or the cerebral cortex for cognitive and metacognitive analysis in the form of mindfulness. Studies show that the mind increases individual control in inhibiting anxiety symptoms by increasing the cognitive and emotional self-regulating skills of the forearm cortex (Yang *et al.*, 2015). Therefore, knowing the effectiveness of the MBSR as an environmental and learning factor and engaging in the forehead can play an important role in reducing anxiety as

a new treatment. The aim of this study was to determine the impact of the MBSR program on social anxiety in students for the first time.

Methods

Study design

We used a randomized controlled trial, with an active non-MBSR group. Whereas students in the MBSR group received the MBSR program in addition to routine care, students in the non-MBSR group received routine care alone. The study was approved by the Psychotherapy Services Center in China.

Subjects and procedure

In this study, the inclusion criteria were: age > 16, a recent new diagnosis of social anxiety, not being under other treatment, and no having other disorder. The sample consisted of 27 students, all in their first year at a China University. Students were studying chemistry, physics, mechanics, medicine, management, accounting and philosophy. The students with social anxiety were randomly assigned to a MBSR group (n = 14) and a non-MBSR group (n = 13). Differences age in the both groups were negligible (MBSR group: mean = 24.18, SD = 2.49; non-MBSR group: mean = 24.21, SD = 2.37).

Directly before and 2 weeks after the MBSR program all 27 students filled in the scales related to the three variables: anxiety, avoidance and reduced stress. According to Fig. 1, there was no drop out. The important point here is that psychology students could attend the MBSR program as part of their studies.

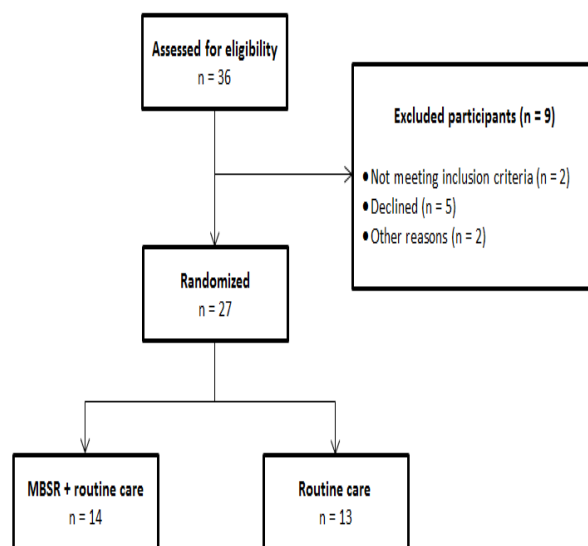


Figure 1. Selection of students with social anxiety through each trial stage

The MBSR program

The MBSR program was a 8-week program, a group session per week, designed to complement advice provided by the anxiety care team. During the sessions, meditative and emotional and cognitive self-regulation skills and, finally, stress reduction methods including winding scan training and yoga methods were taught. Participants were trained to focus on their activities and be aware at any moment of their condition, and whenever emotions and senses are processed, they should observe without judgment, so the participants will learn to focus their thoughts and feelings, but no content.

At the first session, the MBSR was begun to provide group coherence and introduction of individuals, and educational information on stress. At the second session, it was taught to practice body check, and for homework, body check, conscious eating, and sitting meditation. In the third session, relaxed and conscious movements of yoga were presented as a way to calm down the physical symptoms of stress and awareness of delicate body movements. It was also considered body checking, yoga, meditation session focused on breathing, awareness of non-heartfelt events and awareness of a common event as homework. In the fourth session, sitting meditation was considered emphasizing the perception of physical sentiment as mere emotion. At this point, a number of homework recommendations were made including body checks, yoga, walking meditation, and sitting meditation. In the fifth session, it was exchanged about half way through. The homework also

included a communication exercise and an awareness of the difference between the usual reaction (without choice) and the response (with choice). At the sixth session, the meditation was sitting deeply for a long time. In this meeting, homework exercises included body checks, yoga, walking meditation, sitting meditating sessions and daily routine exercises. The seventh session focused on practicing non-selective consciousness or setting meditation. Non-selective consciousness is different from focusing on a particular subject in whom the individual focuses on the subject or mental or physical image. The homework was including body checks, yoga, walking meditation, consciousness and setting meditation in everyday life. At the eighth session, body check was begun, and it continued with setting meditation.

Measures

Anxiety and Avoidance

The variables anxiety and avoidance were measured with the Liebowitz Social Anxiety Scale (LSAS) questionnaire (Liebowitz, 1987), which consists of twenty four items in the original version. The scale assesses the way that social phobia plays a role in person's life across a variety of situations. Heimberg *et al.* (1999) reported the psychometric properties of the LSAS scale and believe that it is one of the most accurate scales available in measuring social anxiety. Previous studies supported the reliability and validity of the LSAS scale (Heimberg *et al.*, 1999; Beard *et al.*, 2011).



Figure 2. Screenshot of the MBSR program

Reduced stress

Reduced stress was measured with the Perceived stress Scale (PSS-14) (Cohen *et al.*, 1983), which consists of fourteen items in original version. Previous studies supported the reliability and validity of the PSS-14 (Lee, 2012; Andreou *et al.*, 2011). We obtained an alpha coefficient of 0.78 at before the MBSR program and of 0.82 at after the MBSR program.

Analysis

The MBSR and non-MBSR groups were compared in a 2 × 2 MANOVA with tests before and after the MBSR program. This study used descriptive statistics to analyze characteristics related to the sample at before the MBSR program. Further, it used independent t-tests and chi-square to determine significant or non-significant relationships between the variables anxiety, avoidance, and reduced stress.

Results

As can be seen in Fig. 1, a total of 36 students were screened for eligibility, 9 students were excluded from our study, and we completed analysis on the data from 27 students. Table 1 shows characteristics at before the MBSR program. Students were aged between 16-40 years. The majority in the MBSR and non-MBSR groups were male, all in their first year at the university. More students in the both groups were studying medicine with a white ethnicity.

Mean scores for the variables anxiety, avoidance and reduced stress were the main measure of students' social anxiety in this study. After the MBSR program, we found significant differences between the MBSR group and non-MBSR group for the variables anxiety (MBSR

group: mean = 2.79, SD = 0.36; non-MBBSR group: mean = 3.31, SD = 0.94), avoidance (MBSR group: mean = 3.78, SD = 0.65; non-MBBSR group: mean = 4.42, SD = 0.62), and reduced stress (MBSR group: mean = 3.71, SD = 0.71; non-MBBSR group: mean = 3.05, SD = 0.19). While anxiety increased in the non-MBSR group (before the MBSR program: mean = 3.07, SD = 0.22, after the MBSR group: mean = 3.31, SD = 0.94), it decreased in the MBSR group (before the MBSR program: mean = 3.11, SD = 0.38, after the MBSR group: mean = 2.79, SD = 0.36). Further, avoidance increased in the non-MBSR group (before the MBSR program: mean = 4.18, SD = 0.37, after the MBSR group: mean = 4.42, SD = 0.62), it decreased in the MBSR group (before the MBSR program: mean = 4.14, SD = 0.11, after the MBSR group: mean = 3.78, SD = 0.65). Reduced stress decreased in the non-MBSR group (before the MBSR program: mean = 3.51, SD = 0.44, after the MBSR group: mean = 3.05, SD = 0.19), it increased in the MBSR group (before the MBSR program: mean = 3.55, SD = 0.67, after the MBSR group: mean = 3.71, SD = 0.71). Most the students experienced high levels of anxiety, avoidance and reduced stress sometimes and often.

Discussion

As expected, in the non-MBSR group, students reported an increase of anxiety symptoms in the social situations. In the MBSR group, it decreased. Thus, the first hypothesis of this paper could be partially supported. As our second hypothesis, students in the non-MBSR group reported an increase of avoidance, whereas the students of the MBSR group reported a decrease.

Table 1. Characteristics at before the MBSR program

		MBSR + routine care (n = 14)	Routine care(n = 13)
Age (mean/SD)	-	25.2 (3.24)	24.95 (3.43)
Gender	Male	n = 9	n = 8
	Female	n = 5	n = 5
Field of Study	Chemistry	n = 1	n = 1
	Physics	n = 2	n = 1
	Mechanics	n = 1	n = 2
	Medicine	n = 6	n = 5
	Management	n = 2	n = 1
	Accounting	n = 1	n = 2
	Philosophy	n = 1	n = 1
Ethnicity	Black African	n = 2	n = 1
	White	n = 8	n = 7
	Indian or Bangladeshi	n = 1	n = 2
	Pakistani	n = 2	n = 2
	Other	n = 1	n = 1



Table 2. Average scores and standard deviations of the MBSR group and non- MBSR group

Variable	MBSR group (n=14)				Non-MBSR group (n=13)			
	Before the intervention		After the intervention		Before the intervention		After the intervention	
	M	SD	M	SD	M	SD	M	SD
Anxiety	3.11	0.38	2.79	0.36	3.07	0.22	3.31	0.94
Avoidance	4.14	0.11	3.78	0.65	4.18	0.37	4.42	0.62
Reduced stress	3.55	0.67	3.71	0.71	3.51	0.44	3.05	0.19

For our third hypothesis, the findings give evidence for the expected increase in reduced stress in the MBSR group, while we found a decrease in the non-MBSR group. According to recent studies, people with social anxiety disorder think mentally over and over again about the conditions before confronting anxious social status and review potential anxiety situations and situations and how to deal with it. They investigate events that might be embarrassed for them, even don't finish the discipline of thoughts after confronting that position, check their behavior in the coming days, usually blame themselves for mistakes and poor displays, and are more pessimistic than others. The principle of the mindfulness training emphasizes the admission without judgment of individuals to the affairs. As a result, people under the treatment get to know that the mind is wandering inside thoughts, memories or fantasies, and they must revert their attention to the present, whenever possible and without regard to the content and nature. One of the functions of mindfulness is to increase self-regulation skills in a person, which includes the control of the emotions and cognitive aspects of social situations. Friedela *et al.* (2015) focused on self-regulatory activities related to the front of a brain or cerebral cortex as the position of cognitive and metacognitive analysis in the form of mindfulness. Based on this research, Yang *et al.* (2015) found that the presence of the mind increases individual control in inhibiting the symptoms of anxiety by increasing the cognitive and emotional self-regulation skills and the effect on the forehead and parasympathetic branch of nervous system. At neurobiology level, it has been shown that mindfulness causes interaction between two hemispheres and between limbic system and cerebral cortex. One part of the therapeutic effect is due to anxiety by stimulating left hemisphere activity and reducing the right hemisphere activity; therefore mindfulness can reduce anxiety by affecting brain's hemispheres (Grossman *et al.*, 2004). In general, it can be argued that Mindfulness-Based Stress Reduction

(MBSR) method is effective in treating social anxiety through effects on biological foundations.

Acknowledgement

Education inheritance research project of Xinjiang Uygur traditional sports intangible cultural heritage (No. RWSK14-Y16).

References

- Andreou E, Alexopoulos EC, Lionis C, Varvogli L, Gnardellis C, Chrousos GP, Darviri C. Perceived stress scale: reliability and validity study in Greece. *International Journal of Environmental Research and Public Health* 2011; 8(8):3287-98.
- Beard C, Amir N. A multi-session interpretation modification program: Changes in interpretation and social anxiety symptoms. *Behaviour Research and Therapy* 2008; 46(10):1135-41.
- Beard C, Rodriguez BF, Moitra E, Sibrava NJ, Bjornsson A, Weisberg RB, Keller MB. Psychometric properties of the Liebowitz Social Anxiety Scale (LSAS) in a longitudinal study of African Americans with anxiety disorders. *Journal of Anxiety Disorders* 2011; 25(5):722-6.
- Bejarpas OF, Soleimani S. Psychological features of delinquent and nondelinquent male and female adolescent. *NeuroQuantology* 2017; 15(2): 246-52.
- Brook CA, Schmidt LA. Social anxiety disorder: A review of environmental risk factors. *Neuropsychiatric disease and treatment* 2008; 4(1): 123-43.
- Carré A, Gierski F, Lemogne C, Tran E, Raucher-Chéné D, Béra-Potelle C, Portefaix C, Kaladjian A, Pierot L, Besche-Richard C, Limosin F. Linear association between social anxiety symptoms and neural activations to angry faces: from subclinical to clinical levels. *Social Cognitive and Affective Neuroscience*. 2013; 9(6):880-6.
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *Journal of Health and Social Behavior* 1983:385-96.
- Farhan M, Haleem DJ. Anxiolytic profile of fluoxetine as monitored following repeated administration in animal rat model of chronic mild stress. *Saudi Pharmaceutical Journal*, 2016; 24(5): 571-578.
- Foa EB. Social anxiety disorder treatments: psychosocial therapies. *The Journal of Clinical Psychiatry* 2006; 67:27-30.
- Friedel S, Whittle SL, Vijayakumar N, Simmons JG, Byrne ML, Schwartz OS, Allen NB. Dispositional mindfulness is predicted by structural development of the insula during late adolescence. *Developmental Cognitive Neuroscience* 2015; 14:62-70.
- Furmark, T. Social phobia: overview of community surveys. *Acta Psychiatrica Scandinavica* 2002; 105, 84-93.



- Grossman, P. Mindfulness based stress reduction and health benefits: a meta- analysis. *American Journal of Psychosomatic Research*, 2004; 57(1):35-43.
- Heimberg RG, Horner KJ, Juster HR, Safren SA, Brown EJ, Schneier FR, Liebowitz MR. Psychometric properties of the Liebowitz social anxiety scale. *Psychological Medicine* 1999; 29(1):199-212.
- Jaipal A, Pandey MM, Charde SY, Raut PP, Prasanth KV, Prasad RG. Effect of HPMC and mannitol on drug release and bioadhesion behavior of buccal discs of buspirone hydrochloride: In-vitro and in-vivo pharmacokinetic studies. *Saudi Pharmaceutical Journal* 2015; 23(3): 315-26.
- Keng SL, Smoski MJ, Robins CJ. Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review* 2011; 31(6):1041-56.
- Lakhan SE, Schofield KL. Mindfulness-based therapies in the treatment of somatization disorders: a systematic review and meta-analysis. *PloS One* 2013; 8(8):e71834.
- Lee EH. Review of the psychometric evidence of the perceived stress scale. *Asian Nursing Research* 2012; 6(4):121-7.
- Liebowitz MR. Social phobia. In *Anxiety. Mod Trends Pharmacopsychiatry* Karger Publishers. 1987, (22,): 141-73.
- Munoz RT, Hoppes S, Hellman CM, Brunk KL, Bragg JE, Cummins C. The effects of mindfulness meditation on hope and stress. *Research on Social Work Practice* 2016:1049731516674319.
- Polo A, Alegría M, Chen CN, Blanco C. The prevalence, comorbidity, and age of onset of social anxiety disorder among US latinos. *The Journal of Clinical Psychiatry* 2011; 72(8):1096-1105.
- Santorelli SF. Mindfulness-based stress reduction (MBSR): Standards of practice. Retrieved April. 2014; 3:2015.
- Shankar H, Kumar N, Sandhir R, Mittal S, Kurra S, Dhaliwal L, Kaur G, Chandhiok N, Dhillon BS, Rao DN. Weekly iron folic acid supplementation plays differential role in maintaining iron markers level in non-anaemic and anaemic primigravida: A randomized controlled study. *Saudi Journal of Biological Sciences*, 2016; 23(6): 724-30.
- Silananda U. *The four foundations of mindfulness*. Simon and Schuster, 1995.
- Stein MB, Stein DJ. Social anxiety disorder. *The Lancet* 2008; 371(9618):1115-25.
- Tabatabaei SS, Ahadi H, Bahrami H, Khamesan A. The Effects of Motivated Strategies for Learning Questionnaire (MSLQ) on Students' Cognitive and Meta-Cognitive Skills. *NeuroQuantology*. 2017; 15(2): 239-45.
- Tharaldsen KB, Bru E. Evaluating the mindfulness-based coping program: an effectiveness study using a mixed model approach. *Mental Illness* 2012; 4(1): e11.
- Ullah A, Khan A, Khan I. Diabetes mellitus and oxidative stress-A concise review. *Saudi Pharmaceutical Journal*, 2016; 24(5): 547-53.
- Yang Y, Liu YH, Zhang HF, Liu JY. Effectiveness of mindfulness-based stress reduction and mindfulness-based cognitive therapies on people living with HIV: A systematic review and meta-analysis. *International Journal of Nursing Sciences* 2015; 2(3):283-94.