

Effectiveness of a Mindfulness-Based Intervention in Older People Exposed to Trauma During the Jeju 4·3 Incident

Hyeonmi Hong¹ and Young-Eun Jung^{2,3}

¹Division of Future Education, Jeju National University, Jeju,

²Department of Psychiatry, School of Medicine, Jeju National University, Jeju,

³4·3 Trauma Center, Jeju, Korea

ABSTRACT

Objective : We assessed the effectiveness of a mindfulness-based intervention in improving positive psychological resources in older people who were affected by the Jeju 4·3 incident.

Methods : This study included 25 older people recruited from the Jeju 4·3 Trauma Center. The intervention was conducted on a once-a-week basis for six weeks. All participants completed self-report questionnaires, including the Five Facet Mindfulness Questionnaire Short Form (FFMQ) and Positive Resources Test (POREST).

Results : This intervention significantly improved the total score and the nonreactivity, observing, acting with awareness, describing, and nonjudging of inner experience FFMQ scores. The interventions also significantly improved the POREST subscale scores.

Conclusion : The mindfulness-based intervention significantly improved positive psychological resources in older people exposed to the Jeju 4·3 incident. (*Anxiety and Mood* 2023;19(2):94-99)

KEYWORDS : Jeju 4·3 incident; Older people; Mindfulness; Positive psychological resources.

Introduction

The psychological impact of a traumatic event may manifest in a variety of ways several years after the event. The psychological effects of trauma are not limited to posttraumatic stress disorder (PTSD); they can affect interpersonal relationships, cause marital instability, and impact employment.^{1,2} The mental health issues experienced by individuals or groups decades after exposure to trauma are not well understood; thus, additional study of the long-term effects of trauma is needed to develop effective interventions.

The Jeju 4·3 incident is a representative case of collective trauma in Korea. The Jeju 4·3 incident (1948–1954) refers to a series of armed uprisings and counterinsurgency events that resulted in an estimated 14,000–30,000 casualties (approx-

mately 10–15% of the population of Jeju Island at the time) and the destruction of hundreds of villages on the Island.^{3,4} Recent studies have investigated the long-term psychological effects on child survivors of the Jeju 4·3 incident, which occurred > 70 years ago, and their families. Jung and Kim⁵ assessed the risk for suicide and depression in 110 survivors of the Jeju 4·3 incident. They found that the rates of suicidal ideation and lifetime suicide attempts were significantly higher among survivors than controls, with survivors being 7.5 times more likely to be in a high-risk group for suicide. A study of PTSD and depressive symptoms that recruited 1,121 Jeju 4·3 survivors and family members found that 10.8% of the participants had PTSD and depressive symptoms, 3.0% had PTSD symptoms alone, and 24.3% had depressive symptoms alone. Those with PTSD and depressive symptoms were in a lower socioeconomic bracket and received less social support from family and the community than those with one condition.⁶ These findings indicate that individuals exposed to the Jeju 4·3 incident as children continue to experience psychiatric problems decades later, highlighting the need for a more comprehensive approach to the assessment and treatment of the long-term effects of trauma. Given the specificity of the traumatic event and advanced age of the survivors, the development and implemen-

Received : September 27, 2023 / Revised : October 18, 2023

Accepted : October 18, 2023

Address for correspondence

Young-Eun Jung, M.D., Ph.D., Department of Psychiatry, School of Medicine, Jeju National University, 15 Aran 13-gil, Jeju 63241, Korea

Tel : +82-64-717-1234, Fax : +82-64-717-1849

E-mail : jyejye77@daum.net

This work was supported by a research grant from Jeju National University Hospital in 2021.

tation of an appropriate intervention for this unique population is urgently needed.

Mindfulness, known as “Sati” in Pali, is a concept taught by the Buddha in ancient India involving non-judgmental attention placed on objects experienced in the present moment. Mindfulness is a fundamental aspect of contemporary cognitive behavioral therapy, which aims to alter behavioral and cognitive responses to emotion through various psychological techniques involving mindfulness, including mindfulness-based stress reduction (MBSR),^{7,8} mindfulness-based cognitive therapy,⁹ dialectical behavior therapy,¹⁰ and acceptance and commitment therapy.¹¹ These mindfulness-based interventions encourage non-judgment, openness, and acceptance; observing negative thoughts and feelings in a non-judgmental manner with an attitude of curiosity and openness; and the development of more adaptive responses to stress. The core techniques of mindfulness interventions include breathing meditation, body scans, walking meditation, and loving-kindness meditation, which foster self-care, self-kindness, and goodwill.^{12,13}

Several randomized controlled trials (RCTs) have shown that mindfulness-based interventions improve a variety of psychological and physical symptoms including depression,¹⁴ anxiety,^{15,16} chronic pain,^{17,18} and substance abuse.¹⁹ Recently, the use of mindfulness-based interventions to treat trauma symptoms has increased. The avoidance behaviors, forced repression of intrusive memories, and unwillingness to experience particular thoughts, feelings, and bodily sensations often exhibited by trauma survivors are contrary to mindfulness.²⁰ Acceptance and mindfulness enable survivors to address emotional dysregulation and acknowledge their personal experiences. In clinical practice, the combination of mindfulness and exposure therapy has been shown to increase the willingness of PTSD patients to confront painful memories and emotions.²¹ An RCT comparing the efficacy of MBSR and present-centered therapy in military veterans diagnosed with PTSD found that PTSD symptoms were similarly reduced by both treatments.²² Moreover, the focus on positive experiences and non-judgmental acceptance practiced in mindfulness can reduce self-criticism and resentment toward others and the world, and increase positive emotions and life satisfaction.²³ While these findings suggest that mindfulness increases positivity, research in this area is relatively limited.

To assess the effectiveness of the mindfulness-based intervention in survivors of the Jeju 4-3 incident, we quantified and compared the participants’ mindfulness and positive psycho-

logical resources before and after the intervention.

Methods

Study participants

Survivors of the Jeju 4-3 incident from the Jeju 4-3 Trauma Center voluntarily enrolled in this study. All participants received a detailed explanation of the study and provided informed consent. Exclusion criteria included cognitive impairment (≤ 23 points on the Mini-Mental State Examination) and medical conditions or physical disabilities that interfered with daily activities. This study was approved by the institutional review board (JEJUNUH 2021-12-016).

Mindfulness-based intervention

The mindfulness-based intervention integrated practical and theoretical elements of the MBSR²⁴ and a mindful self-compassion (MSC) program,²⁵ and was designed for older trauma survivors. The intervention consisted of six weekly 2-h sessions. The participants were divided into three groups of seven to eight individuals. Each session was led by a meditation therapist (psychiatrist) and cofacilitated by a mental health professional (nurse or social worker). The tasks included formal meditation and informal practice consisting of daily mindful activities to be performed during the week, such as bringing one’s attention to what was being done and what was occurring in the present moment with openness, curiosity, and kindness. The sessions had six themes:

- 1) Awakening of the mind: a general introduction and brief review of mindfulness, including mindfulness related to sounds and eating;
- 2) Body sensation awareness: breathing as an anchor for living in the present, body scan meditation, and 3-min breathing;
- 3) Thinking and emotional awareness: labelling and paying attention to emotions through body sensations, sitting meditation, and walking meditation;
- 4) Practicing loving-kindness: an introduction and brief review of compassion, loving-kindness meditation focusing on a loved one, and loving-kindness phrases;
- 5) Exploring difficult moments: meditation focused on difficult emotions, a self-compassion break, and self-compassion meditation;
- 6) Self-growth and application in daily life: a mindful self-care activity, metta meditation practice, gratitude practice, and guidance on how to maintain mindful practice.

Measurement

Five Facet Mindfulness Questionnaire–short form

We used the Five Facet Mindfulness Questionnaire–short form (FFMQ) introduced by Bear et al.²⁶ The questionnaire was revalidated and truncated to reduce the time and cost of measuring mindfulness. The five facets of mindfulness assessed by the questionnaire included observing, describing, acting with awareness, non-judging of inner experience, and nonreactivity to inner experience. The scale consists of 10 items rated on a 7-point Likert scale, where higher scores indicate higher levels of mindfulness.^{26,27}

Positive Resources Test

The Positive Resources Test (POREST) was used to assess positive affect and related psychological resources. The POREST scale, developed by Huh et al.,²⁸ is grounded in positive psychology and provides a comprehensive assessment of cognitive, emotional, and behavioral aspects of positive psychological resources, including the elements of a pleasurable, engaged, and meaningful life, as well as a broader range of positive psychological resources. The scale consists of 23 items rated on a 5-point Likert scale (1=not at all, 5=very much) with higher scores indicating a greater amount of positive psychological resources.

Heart rate variability

Heart rate variability (HRV) is the rhythmic variation in heart rate over time. It reflects autonomic nervous system ac-

tivity and is an objective indicator of physiological responses in various situations. Frequency domain analysis was used to assess the three major components of HRV, i.e., high-frequency (HF), low-frequency (LF), and very low-frequency power. HRV was measured with the participant in a seated position using a Canopy9 plus portable device (IEMBIO, Korea). After the participant displayed relaxed breathing and a clean, consistent waveform without interference, HRV was measured for 2.5 min. The LF/HF ratio reflects overall balance of the autonomic nervous system, such that a higher LF/HF ratio indicates that sympathetic nervous system activity is high relative to parasympathetic activity. Thus, the LF/HF ratio tends to be higher in a person experiencing anxiety or tension where sympathetic activity is higher than parasympathetic activity.²⁹

Data analysis

Pre-post-intervention changes in mindfulness, positive psychological resources, and HRV were assessed using the Wilcoxon rank sum test. Data were assessed using SPSS software (version 25.0; IBM Corp., Armonk, NY, USA), and p-values < 0.05 were considered to indicate statistical significance.

Results

A total of 25 participants were enrolled in the study, and all participants completed the 6-week program. The mean age of the participants was 74.8 years (SD=2.6), and 92.0% were women. Most were married (72.0%), although 28.0% were widowed or living alone (Table 1).

Table 1. Characteristics of the participants

Characteristics	Total (n=25)	Group 1 (n=8)	Group 2 (n=8)	Group 3 (n=9)
Gender				
Men	2 (8.0)	1 (12.5)	1 (12.5)	0 (0.0)
Women	23 (92.0)	7 (87.5)	7 (87.5)	9 (100.0)
Age, y	74.8±2.6	73.4±2.5	75.6±2.4	75.2±2.5
Education, y				
>6	15 (60.0)	4 (50.0)	5 (62.5)	6 (66.7)
≥7	10 (30.0)	4 (50.0)	3 (37.5)	3 (33.3)
Marital status				
Married	18 (72.0)	7 (87.5)	4 (50.0)	7 (77.8)
Widowed	7 (28.0)	1 (12.5)	4 (50.0)	2 (22.2)
Social economic status				
High	3 (12.0)	1 (12.5)	0 (0.0)	2 (22.2)
Middle	19 (76.0)	7 (87.5)	5 (62.5)	7 (77.8)
Low	3 (12.0)	0 (0.0)	3 (37.5)	0 (0.0)
MMSE score	27.9±2.0	27.9±2.0	26.8±2.1	27.8±1.7

Values are presented as number (%) or mean ± standard deviation. MMSE, mini mental state examination

The pre-post changes in FFMQ scores are shown in Table 2. The intervention significantly improved the nonreactivity, observing, acting with awareness, describing, and nonjudging of inner experience scores (all, $p < 0.05$). Furthermore, the intervention significantly improved all POREST subscale scores ($p < 0.05$), except negative affect, growth, and social support (Table 3). The post-intervention LF/HF ratio (0.73 ± 0.68) was significantly lower than the pre-intervention LF/HF ratio (1.25 ± 0.95 , $p = 0.004$) indicating that the intervention decreased sympathetic nervous system activity and reduced anxiety and tension.

Discussion

We developed a mindfulness-based intervention to assess the effectiveness of mindfulness training in fostering positive psychological resources and modulating physiological stress responses in older people who experienced the Jeju 4-3 incident. Our mindfulness-based intervention significantly increased mindfulness and positive psychological resources in survivors of the Jeju 4-3 incident.

Several recent studies have investigated mindfulness in older people. Mindfulness-based interventions in healthy older peo-

Table 2. pre-post changes in FFMQ scores

Variables	Before the intervention	After the intervention	Z	p
FFMQ				
Total	43.80 ± 3.85	67.88 ± 9.57	-4.376	<0.001
Nonreactivity	7.32 ± 1.83	13.32 ± 3.13	-4.379	<0.001
Observing	8.00 ± 1.47	14.08 ± 3.59	-4.298	<0.001
Acting with awareness	9.16 ± 3.09	13.80 ± 2.52	-3.785	<0.001
Describing	10.84 ± 2.46	12.20 ± 2.02	-1.971	0.049
Nonjudging of inner experience	8.48 ± 2.66	14.5 ± 2.60	-4.300	<0.001

Values are presented as mean ± standard deviation. FFMQ, five facet mindfulness questionnaire short form

Table 3. pre-post changes in POREST scores

POREST	Before the intervention	After the intervention	Z	p
Total score	80.96 ± 13.13	94.44 ± 15.52	-4.118	<0.001
Satisfaction with life	3.40 ± 1.04	4.12 ± 1.09	-2.942	0.003
Negative affect	3.36 ± 1.04	3.20 ± 1.56	-0.607	0.544
Positive affect	3.32 ± 0.95	4.04 ± 1.06	-0.308	0.002
Gratitude	3.20 ± 0.91	4.28 ± 0.74	-3.862	<0.001
Acceptance	3.48 ± 1.19	4.24 ± 1.13	-3.094	0.002
Autonomy	3.80 ± 0.71	4.32 ± 0.85	-2.357	0.018
Environmental control	3.60 ± 0.91	4.08 ± 0.95	-2.683	0.007
Growth	3.48 ± 1.26	4.20 ± 0.96	1.805	0.071
Efficacy	3.72 ± 1.10	4.16 ± 1.25	-2.186	0.029
Flow	4.20 ± 0.87	4.68 ± 0.63	-2.652	0.008
Resilience	3.68 ± 1.22	4.20 ± 0.82	-2.074	0.038
Exercise	3.52 ± 1.05	4.24 ± 1.01	-2.504	0.012
Emotion regulation	3.16 ± 1.14	4.04 ± 0.94	-3.156	0.002
Interpersonal relationship	3.36 ± 1.19	4.00 ± 1.08	-2.429	0.015
Purpose in life	3.56 ± 0.77	4.28 ± 0.84	-2.924	0.003
Hope	3.00 ± 1.08	3.76 ± 1.17	-2.553	0.011
Optimism	3.80 ± 0.71	4.48 ± 0.82	-3.368	0.001
Spirituality	3.48 ± 0.82	3.96 ± 1.06	-2.232	0.026
Values realization	3.16 ± 1.21	3.76 ± 1.36	-2.514	0.012
Social support I	4.00 ± 0.86	4.16 ± 0.94	-0.735	0.462
Social support II	3.40 ± 0.87	3.80 ± 1.19	-1.425	0.154
Care I	3.48 ± 1.26	8.00 ± 1.47	-2.186	0.029
Care II	3.80 ± 0.87	9.16 ± 3.09	-2.595	0.009

Values are presented as mean ± standard deviation. POREST, positive resources test

ple have shown positive physical and mental health benefits, including increased attentional focus and present-moment awareness, and decreased reactivity to stressful situations.³⁰ Recent systematic reviews have shown that mindfulness-based interventions improve the management of chronic pain and sleep quality, reduce anxiety and depressive symptoms, and enhance memory and executive functioning in older people.³¹ These findings contribute to the growing body of evidence of the benefits of mindfulness-based interventions in older people experiencing the long-term effects of traumatic events such as the Jeju 4-3 incident. Further research on mindfulness-based interventions in various populations is needed to fully understand and optimize the therapeutic potential of mindfulness in different contexts.

Mindfulness influences positive emotions and psychological well-being.³² Mindfulness-based interventions, such as MBSR, have been shown to increase positive emotions,³³ empathy,³⁴ sense of coherence,³⁵ forgiveness,³⁶ life satisfaction, and quality of life.^{37,38} Park and Chae³⁹ found that a mindfulness-based program cultivated positive psychological resources in outpatients with depressive and/or anxiety disorders. Another study found a significant increase in the total score on the POREST after an 8-week mindfulness-based program.

The practice of mindful acceptance reduces rumination on negative emotions and thoughts, and self-observation allows the development of various coping skills and self-regulation. Mindfulness interventions that incorporate breath and bodily sensation practices promote relaxation and reduce muscle tension, neural arousal, and psychological stress in trauma patients and older people. Ultimately, mindfulness can bring about neurobiological changes.⁴⁰ The mindfulness intervention in our study reduced anxiety and tension, as measured by the HRV index. Older people who experience long-term effects of trauma and various physical and psychological problems often experience a sense of meaninglessness and lack of purpose in life, together with a fear of death and feelings of disconnection from others and the world. Mindfulness is thought to foster positive affective states that alleviate these existential concerns.⁴¹

Our study had several limitations. First, the focus on older people who experienced the Jeju 4-3 incident makes it difficult to generalize our findings to other trauma survivors or the older people population in general. Moreover, our participants and family members were registered with the 4-3 Trauma Center and actively participated in other interventions. Our participants were predominantly healthy older women

and in relatively good mental health, with no observed symptoms of depression or anxiety. Future studies are needed to confirm the effectiveness of mindfulness-based interventions in older people with diverse trauma experiences or symptoms of depression and anxiety. We used a within subject, single-group design (with no control group) to make pre- and post-intervention comparisons. Furthermore, the small sample size did not allow for parametric analyses. Future validation studies should use larger samples, include a control group, and determine whether the short-term effects of mindfulness interventions are sustained.

Conclusion

The most significant outcome of our study is the verification of the positive effects of mindfulness-based interventions in older people exposed to traumatic events. Moreover, our study provides preliminary evidence for the development and expanded application of mindfulness-based interventions in trauma patients or older people. Our finding that mindfulness improves positive psychological resources and positive emotions is particularly significant. Future studies with larger sample sizes, more diverse participant populations, and long-term follow-up are needed to clarify whether mindfulness-based interventions have effects beyond stress reduction and promoting positive psychological resources.

REFERENCES

1. Druss BG, Hwang I, Petukhova M, Sampson NA, Wang PS, Kessler RC. Impairment in role functioning in mental and chronic medical disorders in the United States: results from the National Comorbidity Survey Replication. *Mol Psychiatry* 2009;14:728-737.
2. Bleiberg KL, Markowitz JC. A pilot study of interpersonal psychotherapy for posttraumatic stress disorder. *Am J Psychiatry* 2005;162:181-183.
3. Jeju Peace Foundation. The Jeju 4.3 incident investigation report, 2014. Available from URL: http://www.jeju43peace.or.kr/report_eng.pdf.
4. Jeju Peace Foundation. A guide to the history of the Jeju 4.3 incident, 2016. Available from URL: <http://www.jejupeaceacademy.com/manual.pdf>.
5. Jung YE, Kim MD. Lifetime suicidal attempts and current suicidal risk in aging survivors of the Jeju April 3 incident. *J Affect Disord* 2018; 225:1-3.
6. Jung YE, Kim MD. Prevalence and correlates of comorbid PTSD with depression among older people exposed to the Jeju April 3 incident. *J Affect Disord* 2020;272:8-14.
7. Kabat-Zinn J. An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *Gen Hosp Psychiatry* 1982;4:33-47.
8. Kabat-Zinn J. Full catastrophe living: using the wisdom of your body and mind to face stress, pain, and illness. New York: Dell Publishing; 1990.

9. Segal ZV, Williams JMG, Teasdale JD. Mindfulness-based cognitive therapy for depression: a new approach to preventing relapse. New York: Guilford Press;2002.
10. Hayes SC, Strosahl KD, Wilson KG. Acceptance and commitment therapy: an experiential approach to behavior change. New York: Guilford Press;1999.
11. Linehan MM. Cognitive-behavioral treatment for borderline personality disorder. New York: Guilford Press;1993.
12. Barinaga M. Buddhism and neuroscience: studying the well-trained mind. *Science* 2003;302:44-46.
13. Ha HJ, Kwon SM. Suggestions for psychotherapeutic application of mindfulness meditation. *Instit Buddhist Culture* 2010;56:241-271.
14. Chiesa A, Serretti A. Mindfulness based cognitive therapy for psychiatric disorders: a systematic review and meta-analysis. *Psychiatry Res* 2011;187:441-453.
15. Piet J, Hougaard E, Hecksher MS, Rosenberg NK. A randomized pilot study of mindfulness-based cognitive therapy and group cognitive-behavioral therapy for young adults with social phobia. *Scand J Psychol* 2010;51:403-410.
16. Kabat-Zinn J, Massion AO, Kristeller J, Peterson LG, Fletcher KE, Pbert L, et al. Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *Am J Psychiatry* 1992; 149:936-943.
17. Ledesma D, Kumano H. Mindfulness-based stress reduction and cancer: a meta-analysis. *Psychooncology* 2009;18:571-579.
18. Shennan C, Payne S, Fenlon D. What is the evidence for the use of mindfulness-based interventions in cancer care? A review. *Psychooncology* 2011;20:681-697.
19. Bowen S, Witkiewitz K, Dillworth TM, Chawla N, Simpson TL, Ostafin BD, et al. Mindfulness meditation and substance use in an incarcerated population. *Psychol Addict Behav* 2006;20:343-347.
20. Ehlers A, Clark DM. A cognitive model of posttraumatic stress disorder. *Behav Res Ther* 2000;38:319-345.
21. Cloitre M, Koenen KC, Cohen LR, Han H. Skills training in affective and interpersonal regulation followed by exposure: a phase-based treatment for PTSD related to childhood abuse. *J Consult Clin Psychol* 2002;70:1067-1074.
22. Granato HF, Wilks CR, Miga EM, Korslund KE, Linehan MM. The use of dialectical behavior therapy and prolonged exposure to treat comorbid dissociation and self-harm: the case of a client with borderline personality disorder and posttraumatic stress disorder. *J Clin Psychol* 2015;71:805-815.
23. Polusny MA, Erbes CR, Thuras P, Moran A, Lamberty GJ, Collins RC, et al. Mindfulness-based stress reduction for posttraumatic stress disorder among veterans: a randomized clinical trial. *JAMA* 2015; 314:456-465.
24. Stahl B, Goldstein E. A Mindfulness-Based Stress Reduction Workbook. Oakland, CA: New Harbinger Publications;2010.
25. Neff KD. Self-compassion: stop beating yourself up and leave insecurity behind. New York: William Morrow;2011.
26. Baer RA, Smith GT, Allen KB. Assessment of mindfulness by self-report: the kentucky inventory of mindfulness skills. *Assessment* 2004;11:191-206.
27. Won DR, Kim KH. Validation of the Korean version of five-factor mindfulness questionnaire. *Korean J Health Psychol* 2006;11:871-886.
28. Huh HJ, Kim SY, Min JA, Chae JH. Development of the clinical short-form positive resources test. *Stress* 2018;26:77-87.
29. Kim W, Woo JM, Chae JH. Heart rate variability in psychiatry. *J Korean Neuropsychiatr Assoc* 2005;44:176-184.
30. Geiger PJ, Boggero IA, Brake CA, Caldera CA, Combs HL, Peters JR, et al. Mindfulness-based interventions for older people: A review of the effects on physical and emotional well-being. *Mindfulness (NY)* 2016;7:296-307.
31. Hazlett-Stevens H, Singer J, Chong A. Mindfulness-based stress reduction and mindfulness-based cognitive therapy with older people: a qualitative review of randomized controlled outcome research. *Clin Gerontol* 2019;42:347-358.
32. Keng SL, Smoski MJ, Robins CJ. Effects of mindfulness on psychological health: a review of empirical studies. *Clin Psychol Rev* 2011; 31:1041-1056.
33. Anderson ND, Lau MA, Segal ZV, Bishop SR. Mindfulness-based stress reduction and attentional control. *Clin Psychol Psychother* 2007; 14:449-463.
34. Shapiro SL, Schwartz G, Bonner G. Effects of mindfulness-based stress reduction on medical and premedical students. *J Behav Med* 1998;21:581-599.
35. Weissbecker I, Salmon P, Studts JL, Floyd AR, Dedert EA, Sephton SE. Mindfulness-based stress reduction and sense of coherence among women with fibromyalgia. *J Clin Psychol Med Settings* 2002; 9:297-307.
36. Oman D, Shapiro SL, Thoresen CE, Plante TG, Flinders T. Meditation lowers stress and supports forgiveness among college students. *J Am Coll Health* 2008;56:569-578.
37. Grossman P, Kappos L, Gensicke H, D'Souza M, Mohr DC, Penner IK, et al. MS quality of life, depression, and fatigue improve after mindfulness training: a randomized trial. *Neurology* 2010;75:1141-1149.
38. Shapiro SL, Astin JA, Bishop SR, Cordova M. Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *Int J Stress Manag* 2005;12:164-176.
39. Park YN, Chae JH. The effect of mindfulness meditation on positive resources and positive affects in outpatients with depressive disorder and anxiety disorder. *Mood Emot* 2017;15:67-72.
40. Shapiro SL, Carlson LE, Astin JA, Freedman B. Mechanisms of mindfulness. *J Clin Psychol* 2006;62:373-386.
41. Follette VM, Briere J, Rozelle D, Hopper JW, Rome DI. Mindfulness-oriented Interventions for Trauma: Integrating Contemplative Practices. New York: Guilford Press;2015.