Avicenna Journal of Neuro Psycho Physiology
doi: 10.32592/ajnpp.2020.7.4.107 2020 November;7(4): 242-248 https://ajnpp.umsha.ac.ir

Original Article

Prediction of Psychological Well-being based on Mindfulness and Emotion Regulation Strategies among Patients with Multiple Sclerosis in Shiraz within 2018-19

Kimia Dehbozorgi[1*], Sare Behzadi Pour[2]

[1] MSc in Psychology, Department of Psychology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
[2] PhD, Assistant Professor, Department of Psychology, Shiraz Branch, Islamic Azad University, Shiraz, Iran

*Corresponding author:
Kimia Dehbozorgi, Department of Psychology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
Tel: 09331185461
Email: k_dehbozorgi@yahoo.com

Received: 04 Mar. 2020
Accepted: 09 Jul. 2020
ePublished: 01 Nov. 2020

Abstract

Background and Objective: Multiple sclerosis (MS) is a chronic neurodegenerative disease of the central nervous system affecting the brain and spinal cord functions, with mild to severe physical, visual, cognitive, and emotional responses. The present research aimed to predict psychological well-being based on mindfulness and emotion regulation strategies among patients with MS.

Materials and Methods: In this correlational study, 80 patients with MS were selected by the random sampling method in the academic year of 2018-19 in Shiraz, Iran. To collect the necessary data, three questionnaires were used as the tools of study, namely the Scales of Psychological Well-Being (SPWB), Five Facet Mindfulness Questionnaire (FFMQ), and Emotion Regulation Questionnaire (ERQ). The gathered data were analyzed in AMOS software (version 23) using the multivariable kurtosis coefficient of Mardia.

Results: The results of this research implied that there was a significant relationship among the FFMQ dimensions (i.e., observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience) and the ERQ dimensions (reappraisal and suppression) with the SPWB dimensions (i.e., personal growth, self-acceptance, positive relationships with others, life satisfaction, spirituality, and pleasure and optimism) ($P<0.05$).

Conclusion: It was concluded that training mindfulness and emotion regulation strategies are applicable for patients with MS to improve their psychological well-being components in their lives. Future researchers are recommended to consider other patient groups with other diseases. It is suggested to apply the experimental research designs to promote psychological well-being.

Keywords: Emotion regulation, Mindfulness, Multiple sclerosis, Psychological well-being

Background

Multiple sclerosis (MS) is a chronic and persistent neurological condition, with about 2.3 million individuals diagnosed globally [1]. This disease causes major morbidity [2] and mortality in young adults with a 6-7-year shorter life expectancy [3]. Social and psychological factors may predict the incidence of MS or play important roles in the development of this disease regarding their close relationship to its symptoms. In this respect, cognitive impairment, as the patient's most important determinants of social behaviors, is one of the significant outcomes of MS [4]. Since MS may influence an individual's emotions harmfully, the negative self-concepts replace the positive ones. Such changes are detrimental to the patient's psychological well-being [5].

Psychological well-being, as a subjective concept, is defined differently for different individuals. This concept is a state of mental health, meaning that a healthy person can manage and cope with the pressures of regular daily life in an acceptable way [6]. Psychological well-being consists of two dimensions, namely emotional and cognitive. The cognitive dimension refers to a cognitive assessment of life satisfaction, while the emotional component offers full positive emotions and minimum negative emotions [7]. Psychological well-being refers to the concept of interpersonal relationships and successful outcomes. This is the wellness process leading to a lifelong, permanent, and relatively stable assessment of internal satisfaction [8].

Mindfulness is one of the influential factors in developing psychological well-being and decreasing psychological issues [9]. Mindfulness allows individuals to perceive the fact that although negative emotions can occur, they are not the fixed and permanent parts of their personality [10]. This concept means living at the present

without judging and reflecting on the ongoing events. Moreover, it indicates living the pure truth without reason [11]. In mindfulness meditation, perception is demonstrated as a therapeutic intervention to produce beneficial effects on mental and physical conditions, especially regarding emotional change and recovery from affected psychopathology [12]. In addition, it has been shown that this type of mediation promotes well-being and emotional equilibrium, decreases reactivity to stress [13], and minimizes negative anxiety and depression-related feelings [12].

Emotion regulation is defined as the point of departure towards maintaining, moderating, or changing the emergence, intensifying, or continuing inner feelings. It also refers to emotions related to social, psychological, and physical processes in achieving goals [14]. Regulation of emotions through thoughts and cognitions is unavoidable in human life and helps individuals control their emotions after experiencing stressful events [15]. This aspect is the normal dimension of emotional responses to orientations. According to Granefski and Kraaij, techniques for managing cognitive emotions are acts that deal with stressful conditions or adversities [16].

Emotion regulation plays a central role in the normative transition and its weakness is an important factor in mental disorder incidence. Therefore, theorists believe that individuals who do not manage their emotions properly toward daily internalizing disorders, such as depression and anxiety, manifest more diagnostic symptoms [17]. Based on the results of a meta-analysis study, mindfulness meditation was more effective than control programs in reducing negative affectivity [18]. Oraki and Sami reported that cognitive behavioral intervention based on integrated mindfulness could be introduced as an effective psychological intervention enhancing the indicators of psychological well-being, as well as the quality of life, among patients with MS [19].

The literature review has shown that mindfulness is a good predictor of psychological well-being. Therefore, it can be expected that psychological well-being, being related to the stress level and physical-mental diseases, will be improved as mindfulness increases [20]. The results of research conducted by Senders et al. (2017) have revealed the existence of a remarkable link between pain and attention. Additionally, patients with MS may have a major interaction between pain and attention disorder. This research has highlighted the importance of mindfulness-based intervention in pain management among MS patients [21]. Schirda et al. (2014) showed that mindfulness plays a role in preserving the quality of life of MS patients, influences their quality of life, and is a potential mechanism for regulating emotions [22].

Objectives

To the best of our knowledge, the chronic and disabling nature of MS, the worldwide or regional figures on MS, and the psychological difficulties among patients with MS were taken into consideration less than its physiological related issues. Therefore, the present study aimed to investigate the prediction of psychological well-being based on mindfulness and emotion regulation strategies among individuals with MS.

Materials and Methods

This descriptive-correlative study was conducted on all MS patients with a medical record in Fars Multiple Sclerosis Society affiliated with Shiraz University of Medical Sciences, Iran (n=6000 in 2017). The sample consisted of 80 patients selected by a simple random sampling method based on Cohen's table. After receiving the necessary permissions from Azad University of Shiraz, the researcher was referred to the Fars Multiple Sclerosis Society. To conduct the study, the researcher explained the research procedure to the participants and obtained their verbal satisfaction. Subsequently, the subjects were asked to complete the three questionnaires and were provided with the necessary explanations on how to answer the questions.

The participants were provided with the aim of the study, and they embarked on filling out the questionnaires with confidence and accuracy. Furthermore, the participants were informed about the confidentiality of their personal information. The procedure for completing the questionnaires took about 3 months. In the final stage, the obtained information was scored and interpreted. The correlations between variables were calculated using the Pearson correlation coefficient. The collected data were analyzed in AMOS software (version 23) using the multivariable Kurtosis coefficient of the Mardia to identify whether mindfulness or emotion regulation strategies could better predict psychological well-being.

The Scales of Psychological Well-Being

This questionnaire, designed by Ryff, consists of 77 items based on the model and scale of psychological well-being, including six subscales, namely autonomy, environmental mastery, personal growth, purpose in life, positive relations with others, and self-acceptance [23]. In this questionnaire, the items are scored on a five-point Likert scale (1=totally

agree, 2=agree, 3=no idea, 4=disagree, 5=totally disagree). If the questionnaire scores are < 126, psychological health would be low. The score range of 126-176 suggests an intermediate level of well-being, and those > 176 indicate a high level of well-being. The test-retest reliability coefficient of this instrument was calculated as 0.82. Moreover, the reliability of self-acceptance, positive relation with others, autonomy, environmental mastery, purpose in life, and personal growth subscales were found to be respectively 0.71, 0.77, 0.78, 0.77, 0.70, and 0.78 [24]. In addition, the reliability of the questionnaire was obtained at 0.93 using Cronbach's alpha coefficient method.

The Five Facet Mindfulness Questionnaire

The Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF), developed by Baer et al., contains a total of 24 items (12 of which were reverse-scored) in five subscales, namely acting with awareness (n=5, e.g., "I rush through activities without really being attentive to them"), describing (n=5, e.g., "I'm happy to find words to explain my emotions,"), observing (n=4, e.g., "I notice the smell and aromas of things"), non-judging of inner experience (n=5, e.g., "I tell myself that I shouldn't feel the way I feel"), and non-reactivity to inner experience (n=5, e.g., "I'm watching my feelings without getting carried away by them") [25]. The scores of the respondents were rated on a 5-point Likert scale (never or very rarely valid=1 to severely frequently or always true=5). FFMQ subscales were shown to have good internal consistencies rendering a Cronbach's alpha coefficients exceeding the given 0.70 criteria [26-28]. Furthermore, the results of a study performed in Iran to examine the reliability and validity of the mindfulness questionnaire were indicative of a high level of Cronbach's alpha reliability coefficient of FFMQ (α=0.81) [29]. The reliability of the mindfulness questionnaire in the present research was obtained at 0.83 using Cronbach's alpha coefficient. Additionally, the reliability of the subscales of observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience were calculated as 0.72, 0.83, 0.35, 0.45, and 0.84, respectively.

The Emotion Regulation Questionnaire

This questionnaire, developed by Gross and John, includes 10 items with the main goal of measuring emotion regulation strategies. This tool includes reappraisal and suppression as variables [30]. The approach of scoring is based on a seven-point Likert scale (totally agree=1 to totally disagree=7), with the minimum score of 10 and the highest score of 70. The score ranges of 10-27 and 27-40 represent weak emotion regulation and average emotion regulation, respectively. A total score of above 40 indicates strong emotion regulation. In this questionnaire, the internal correlations for reappraisal and suppression were calculated as 0.79 and 0.73, respectively. In Iran, Hasani reported Cronbach's alpha coefficient for reappraisal as 0.79 [31]. In the present study, the reliability of this instrument, using the Cronbach's alpha coefficient, was obtained at 0.46, as well as that for reappraisal and suppression variables being 0.46 and 0.08, respectively.

Results

The study sample consisted of 44% males and 56% females. The mean age of the participants was 49.32 years. The education level of 42%, 36%, and 22% of these subjects was respectively under BA, with a BA, upper BA. Table 1 summarizes the descriptive statistics of the research variables (i.e., central indices, including mean, standard deviation, Kurtosis, and skewness).

The results of the descriptive findings of the subscales have revealed that in the components of mindfulness, the highest and lowest mean scores are related to observing and non-judging of inner experience, respectively. This section seeks to answer the main research hypothesis 'Prediction of psychological well-being based on mindfulness

Table 1. Descriptive statistics of the subscales used in the study

Variable	Subscale	n	Mean	SD	Skewness	Kurtosis
Mindfulness	Observing	220	26.76	5.36	-0.02	0.329
	Describing	220	25.06	6.22	0.03	0.327
	Acting with awareness	220	23.21	3.70	-0.67	0.327
	Non-judging of inner experience	220	21.19	3.34	0.58	0.327
	Non-reactivity to inner experience	220	22.12	4.74	0.66	0.327
Emotion regulation	Reappraisal	220	25.34	7.71	-0.01	0.327
	Repression	220	14.31	4.30	0.79	0.327
Psychological well-being	Self-development	220	24.46	5.06	0.14	0.327
	Self-esteem	220	28.57	6.36	0.80	0.327
	Positive relationship	220	22.75	7.41	0.64	.327
	Life satisfaction	220	57.72	15.01	0.44	0.329
	Spirituality	220	34.08	9.62	0.66	0.328
	Happiness	**220**	55.36	12.21	0.17	0.327

and emotion regulation strategies among patients with MS'.

Structural equation modeling was used in the current study. One of the assumptions of this modeling was the normality of the multivariate distribution. The value of the Mardia coefficient for the present study was calculated as 3.26, indicating that the assumption of multivariate normality was accepted. Since structural equations are based on a linear correlation between variables, the linear correlation matrix between research variables is reported in the following (Table 2).

According to the correlation matrix, the scales of mindfulness and emotion regulation have a positive and significant correlation with psychological well-being (P≤0.01).

The conceptual model of the research is presented in two states, standardized and non-standardized coefficients (figures 1 and 2).

The most important indicators for fitting the conceptual model of research are reported in Table 3.

Based on the results of Table 3, it can be concluded that the model has a good fit.

According to the results of Table 4, the direct effect of mindfulness and emotion regulation on

Table 2. Correlation matrix between variables

Variables	Mindfulness	Emotion regulation	Psychological well-being
Mindfulness	1		
Emotion regulation	0.63**	1	
Psychological well-being	0.57**	0.86**	1

*P<0.05, **P<0.01

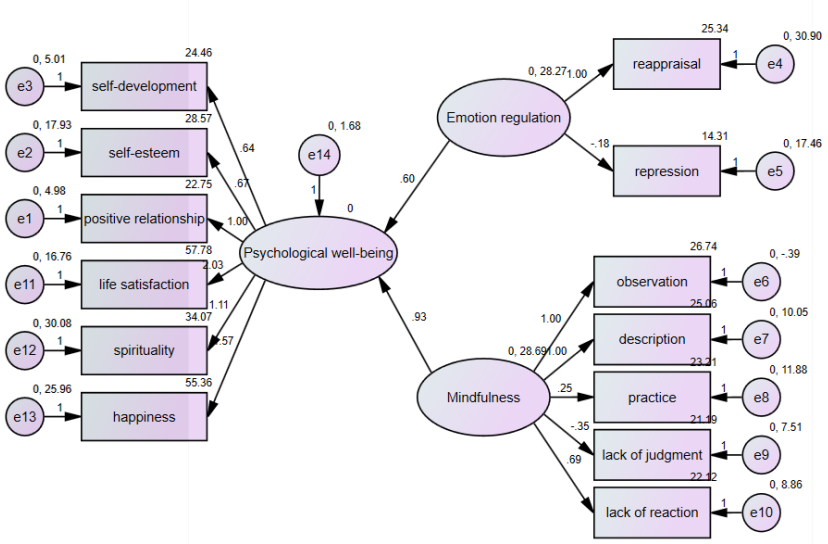

Figure 1. None-standardized coefficient model

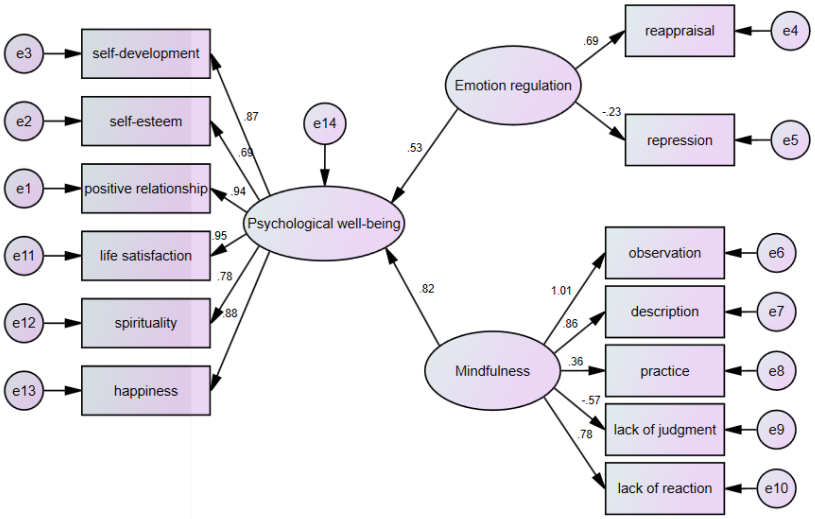

Figure 2. Standardized coefficient model

Table 3. Model fit indicators

Indicator	Value	Allowable limitation
($\chi 2$)/*df*	1.64	Less than 3
RMSEA	0.04	Less than 0.05
CFI	0.95	Above 0.9
NFI	0.94	Above 0.9
GFI	0.96	Above 0.9
AGFI	0.94	Above 0.9

1. RMSEA: Root Mean Square Error Approximation, 2. CFI: Comparative Fit Index, 3. NFI: Normed Fit Index, 4. GFI: Goodness of Fit Index, 5. AGFI: Adjusted Goodness of Fit Index

Table 4. Effect of emotion regulation and mindfulness on psychological well-being

Hypothesis	None-standardized coefficient	β coefficient	C.R.	Sig
Mindfulness → Psychological well-being	0.93	0.82	21.64	0.001
Emotion regulation → Psychological well-being	0.60	0.53	6.53	0.001

the psychological well-being components were significant (P<0.01).

Discussion

The results of this study showed that the mechanisms for regulating mindfulness and emotion are significantly related to psychological well-being and can significantly predict it in different dimensions. Regarding this, individuals can enhance their psychological well-being by increasing their responsiveness and improving their emotion regulation processes. This finding is consistent with those of other studies, including Harmon-Jones et al. [7], Western and Tomaszewski [8], Roberto et al. [9], Valim et al. [10], and Khusid and Vythilingam [12].

The dimensions, such as observing, describing, acting, and suppression, can predict the personal growth of patients with MS. It is important to note that subjective observing skill has to reach the describing skill through concentration on occurring events. Indeed, by practicing mindfulness, one can improve different subscales of this variable, including observing, describing, and acting. Accordingly, enhancement in observing and describing skills leads to sound decision-making and better acting [32].

As the results imply, observing, describing, acting, and non-reactivity can significantly predict self-acceptance [33, 34]. Therefore, sound observing, accurate describing, and logical acting based on the observing and describing, as well as emotional non-reactivity to the conditions, imply following mental awareness and accurate emotion regulation procedures [34]. Based on the results, the variables of observing, describing, non-reactivity, and reappraisal are significant predictors of the positive relationships among the other variables [34, 35].

It can be argued that observing, event reviewing, and sound describing of the events and communications, as well as undesirable and emotional non-reactivity, give an individual adequate time to control emotions and self-control if integrated with a reappraisal of the events and thinking more of the issues since the individual is detached from the problems. As a result, these factors can make individuals think about how to build relationships with others, irrespective of emotional and unfavorable conditions. The consequences of this approach would be the improvement of decision-making in personal and collective relations, leading individuals to positive relationships with others disregarding the emotional and intensive encounters [35].

According to the findings of this study, it is implied that observing, no-reactivity, reappraisal, and suppression can predict life satisfaction among patients with MS [33-35]. A large body of research indicates that mindfulness enhancement leads to psychological well-being improvement, which in turn, increases life satisfaction. In this respect, it is noteworthy to say that the improvement of subjective observing, as well as the desirable perception of subjective events, improve the person's logical acting along with emotional non-reactivity to the problems leading to the decline in daily life tensions. Consequently, such patients gain the skills to make better decisions regarding the problems in which they are involved, leading to obtaining more desirable results. The results of such changes would be life satisfaction among such patients and equipping them with desirable emotions, raised awareness, and a positive attitude towards life [36].

Considering the results, observing, describing, non-judging, non-reactivity, and suppression can significantly predict spirituality. It should be noted that not only the patients' mindfulness skills would enhance but also they are detached from stressful situations and anxiety; therefore, a positive attitude is achieved towards the events. As a result, the individuals' spiritual, internal satisfaction, and consequently their inner spirituality, would increase

[33-35]. It was found out that observing, describing, and acting can predict the pleasure and optimism among the patients with MS [31-34]. Pleasure and optimism refer to overcoming negative emotions with positive ones and making more optimistic decisions. It seems that optimism is mostly related to the cognitive aspects of psychological life rather than to the emotional aspects [36]. It can be concluded that observing subjective events from a better point of view leads to accurate describing, resulting in individuals' better performance under instantaneous conditions and gaining a feeling of satisfaction with their performance and present conditions.

This satisfaction creates a positive feeling and leads to pleasure and optimism. The present study has several limitations restricting the generalization of the results to varying degrees. Although the sample size was higher than most, if not all, studies conducted on investigating mindfulness in the MS area, it was still relatively small. Therefore, the results of this study cannot be generalized. In this regard, it is recommended that these variables be examined in other cities as well. The other limitation was related to the research tools as self-report questionnaires influencing the findings as a result. The authors have suggested that patients with MS be trained regarding emotional control and counseling to reduce their mental distress. Furthermore, it is recommended that such patients be taught about mindfulness to improve the dimensions of their psychological well-being.

Conclusions

Training mindfulness and emotion regulation strategies are applicable for patients with MS with the purpose of improving psychological well-being components in their lives. Future researchers are recommended to investigate these variables on other patients with other diseases. It is also suggested to apply the experimental research designs to promote psychological well-being.

Compliance with ethical guidelines

The present study was extracted from a Ph.D. thesis dissertation of the general psychology submitted to the Islamic Azad University, Shiraz. This research was approved by the Ethics Committee of the Islamic Azad University, Shiraz (IR.IAU.TON.REC.1396.152).

Acknowledgments

The authors would like to express their gratitude to all the participants for their valuable collaboration to accomplish this study at Shiraz.

Authors' contributions

KD and SB developed and designed the study, analyzed the data, prepared figures and/or tables, and wrote the paper. KD developed and designed the experiments, reviewed paper drafts, monitored the whole process of the study, and contributed to the reagents/materials/analysis tools.

Funding/Support

This research has received no specific grant from the public, commercial, or non-profit funding agencies.

Conflicts of Interest

The authors declare that there is no conflict of interest.

References

1. Huang WJ, Chen WW, Zhang X. Multiple sclerosis: pathology, diagnosis and treatments. Experimental and Therapeutic Medicine. 2017; 13(6):3163-6. [DOI:10.3892/etm.2017.4410] [PMID] [PMCID]
2. Baecher-Allan C, Kaskow BJ, Weiner HL. Multiple sclerosis: mechanisms and immunotherapy. Neuron. 2018; 97(4):742-68. [DOI:10.1016/j.neuron.2018.01.021] [PMID]
3. Desai Mk, Brinton Dr. Autoimmune disease in women: endocrine transition and risk across the lifespan. Frontiers in Endocrinology. 2019; 10:265. [DOI:10.3389/fendo.2019.00265] [PMID] [PMCID]
4. Reeve D, Gayson T, Stephan C. Increasing NICE compliance in multiple sclerosis and cognitive: a service evaluation. Social Care and Neurodisability. 2014; 5(2):102-10. [DOI:10.1108/SCN-08-2013-0031]
5. Barker AB, das Nair R, Lincoln NB, Hunt N. Social identity in people with multiple sclerosis: a meta-synthesis of qualitative research. Social Care and Neurodisability. 2014; 5(4):256-67. [DOI:10.1108/SCN-05-2014-0009]
6. Wells IE. Psychological well-being, psychological of emotion, motivation and actions. New York: Nova Science Publishers; 2010.
7. Harmon-Jones E, Harmon-Jones C, Summerell E. On the importance of both dimensional and discrete models of emotion. Behavioral sciences (Basel, Switzerland). 2017; 7(4):66. [DOI:10.3390/bs7040066] [PMID] [PMCID]
8. Western M, Tomaszewski W. Subjective wellbeing, objective wellbeing and inequality in Australia. PLoS One. 2016; 11(10):e0163345. [DOI:10.1371/journal.pone.0163345] [PMID] [PMCID]
9. Chiodelli R, Mello LT, Jesus SN, Andretta I. Effects of a brief mindfulness-based intervention on emotional regulation and levels of mindfulness in senior students. Sicologia, Reflexao E Critica. 2018; 31(1):21. [DOI:10.1186/s41155-018-0099-7] [PMID] [PMCID]
10. Valim C, Marques LM, Boggio PS. A positive emotional-based meditation but not mindfulness-based meditation improves emotion regulation. Frontiers in Psychology. 2019; 10:647. [DOI:10.3389/fpsyg.2019.00647] [PMID] [PMCID]
11. Desbordes G, Gard T, Hoge EA, Hölzel BK, Kerr C, Lazar SW, at al. Moving beyond mindfulness: defining equanimity as an outcome measure in meditation and contemplative research. Mindfulness (N Y). 2015; 6(2):356-72. [DOI:10.1007/s12671-013-0269-8] [PMID] [PMCID]
12. Khusid MA, Vythilingam M. The emerging role of mindfulness meditation as effective self-management strategy, part 1: clinical implications for depression, post-traumatic stress disorder, and anxiety. Military Medicine. 2016; 181(9):961-8. [DOI:10.7205/MILMED-D-14-00677] [PMID]
13. Goyal M, Singh S, Sibinga EM, Gould NF, Rowland-Seymour A, Sharma R, et al. Meditation programs for psychological stress and well-being: a systematic review and meta-analysis. JAMA Internal Medicine. 2014; 174(3): 357-68. [DOI:10.1001/jamainternmed.2013.13018] [PMID] [PMCID]
14. Gross JJ, Thompson RA. Emotion regulation: conceptual foundations. Handbook of emotion regulation. New York: Guilford Press; 2006.
15. Garnefski N, Kraaij V, Spinhoven P. Negative life events,

cognitive emotion regulation and emotional problems. Personality and Individual Differences. 2001; 30(8):1311-27. [DOI:10.1016/S0191-8869(00)00113-6]
16. Garnefski N, Kraaij V. Cognitive emotion regulation questionnaire–development of a short 18-item version (CERQ-short). Personality and Individual Differences. 2006; 41(6):1045-53. [DOI:10.1016/j.paid.2006.04.010]
17. Nolen-Hoeksema S, Wisco BE, Lyubomirsky S. Rethinking Rumination. Personality Psychology Sciences. 2008; 3(5):400-24. [DOI:10.1111/j.1745-6924.2008.00088.x] [PMID]
18. Schumer MC, Lindsay EK, David Creswell J. Brief mindfulness training for negative affectivity: a systematic review and meta-analysis. Journal of Consulting and Clinical Psychology. 2018; 86(7):569-83. [DOI:10.1037/ccp0000324] [PMID] [PMCID]
19. Oraki M, Sami P. The effect of mindfulness integrated behavior- cognitive therapy on psychological well-being and quality of life among multiple sclerosis patients. Health Psychology. 2017; 5(20):34-47.
20. Jansen P, Dahmen-Zimmer K, Kudielka BM, Schulz A. Effects of karate training versus mindfulness training on emotional well-being and cognitive performance in later life. Research on Aging. 2017; 39(10):1118-44. [DOI 10.1177/0164027516669987] [PMID]
21. Senders A, Borgatti A, Hanes D, Shinto L. The association between pain and mindfulness in multiple sclerosis: a cross-sectional survey. International Journal of MS Care. 2018; 20(1):28-34. [DOI:10. 7224/1537-2073. 2016-076] [PMID] [PMCID]
22. Schirda BL. Examining the role of trait mindfulness and emotion regulation in quality of life in multiple sclerosis. [Doctoral Dissertation]. Columbus, Ohio: The Ohio State University; 2014.
23. Ryff CD, Keyes CI. The structure of psychological well-being revisited. Journal of Personality and Social Psychology. 1995; 69(4):719-27. [DOI:10.1037//0022-3514.69.4.719] [PMID]
24. Bayani AA, Mohammad Koochekya A, Bayani A. Reliability and validity of Ryff's psychological well-being scales. Iranian Journal of Psychiatry and Clinical Psychology. 2008; 14(2):146-51.
25. Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L. Using self- report assessment methods to explore facets of mindfulness. Assessment. 2006; 13(1):27-45. [DOI:10.1177/1073191105283504] [PMID]
26. Walach H, Buchheld N, Buttenmüller V, Kleinknecht N, Schmidt S. Measuring mindfulness—the Freiburg mindfulness inventory (FMI). Personality and Individual Differences. 2006; 40(8):1543-55. [DOI:10.1016/j.paid.2005.11.025]
27. Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological wellbeing. Journal of Personality and Social Psychology. 2003; 84(4):822-48. [DOI 10.1037/0022-3514.84.4.822] [PMID]
28. Baer RA, Smith GT, Allen KB. Assessment of mindfulness by self-report: the Kentucky inventory of mindfulness skills. Assessment. 2004; 11(3):191-206. [DOI:10.1177/1073191104268029] [PMID]
29. Tamannaeifar S, Asgharnejade FA, Mirzaee M, Soleimani M. Psychometric properties of five factor mindfulness questionnaire. Developmental Psychology. 2016; 12(47): 321-29.
30. Gross JJ, John OP. Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. Journal of Personality and Social Psychology. 2003; 85(2):348-62. [DOI:10.1037/0022-3514.85.2.348] [PMID]
31. Hasani J. Persian version of the emotion regulation questionnaire: Factor structure, reliability and validity. International Journal of Behavioral Sciences. 2016; 10(3): 156-61.
32. Karthik L, Kumar G, Keswani T, Bhattacharyya A, Chandar SS, Rao KB. Protease inhibitors from marine actinobacteria as a potential source for antimalarial compound. PloS One. 2014; 9(3):e90972. [DOI:10.1371/journal.pone.0090972] [PMID] [PMCID]
33. Iani L, Lauriola M, Cafaro V, Didonna F. Dimensions of mindfulness and their relations with psychological well-being and neuroticism. Mindfulness. 2017; 8(3):664-76. [DOI:10.1007/s12671-016-0645-2] [PMID] [PMCID]
34. Mayer C, Im S, Stavas J, Hazlett-Stevens H. Mindfulness facets associated with perceived stress: the role of nonreactivity. Journal of Depression and Anxiety Forecast. 2019; 2(1):1009.
35. Stevenson JC, Millings A, Emerson LM. Psychological well-being and coping: the predictive value of adult attachment, dispositional mindfulness, and emotion regulation. Mindfulness. 2019; 10(2):256-71. [DOI:10.1007/s12671-018-0970-8]
36. Thuillard S, Dan-Glauser ES. The regulatory effect of choice in Situation Selection reduces experiential, exocrine and respiratory arousal for negative emotional stimulations. Scientific Reports. 2017; 7(1):12626. [DOI:10.1038/s41598-017-12626-7] [PMID] [PMCID]