REVIEW ARTICLE

Hypnotherapy as a Nonpharmacological Treatment for the Psychological Symptoms of Multiple Sclerosis

Giuseppa Maresca, PSY; Vanessa Nocito, PSY; Viviana Lo Buono, PSY; Desiree Latella, PSY; Marcella Di Cara, PSY; Caterina Formica, PSY, PhD; Lara Carnazza; Edoardo Sessa, MD; Placido Bramanti, MD; Francesco Corallo, PSY

ABSTRACT

Context • Stress and chronic pain are the factors that most influence the quality of life and well-being of people with MS, and 90% of adults with MS suffer from persistent fatigue. These symptoms can be associated with other disorders such as depression, and drug treatments provide inadequate comfort for most people with them.

Objective • The study intended to examine the impact of hypnosis and hypnotherapy in the management of symptoms of people with multiple sclerosis (MS), such as stress, chronic pain, an inferior quality of life, and a lack of psychological well-being.

Design • The research team performed a systematic narrative review by searching the PubMed and Web of Science databases, including review articles and other studies for additional citations.

Setting • The study was conducted at our Scientific Institute for Research (IRCCS) in Messina.

Results • Only 14 of 121 publications met the inclusion criteria and were selected. Hypnotic treatment is an effective therapy that has beneficial impacts on the intensity of perceived pain, psychological well-being, mood disorders, and fatigue, and in addition, it significantly improves physical functioning in MS patients. The same effects haven't been obtained with other nonpharmacological techniques.

Conclusion • Hypnosis is an appropriate psychological therapy for the management of MS patients' symptoms. (*Altern Ther Health Med.* 2023;29(4):266-269).

Giuseppa Maresca, PSY, health researcher; **Vanessa Nocito, PSY**, psychologist; **Viviana Lo Buono, PSY**, health researcher; **Desiree Latella, PSY**; health researcher; **Marcella Di Cara, PSY;** health researcher; **Caterina Formica, PSY, PhD**, health researcher; **Lara Carnazza,** research assistant; **Edoardo Sessa, MD**; **Placido Bramanti, MD; Francesco Corallo, PSY;** health researcher; Center for Neurological Disorders, Scientific Institute for Research, Hospitalization and Healthcare (IRCCS), Messina, Italy.

Corresponding author: Caterina Formica, PSY, PhD
E-mail: katia.formica@irccsme.it

Multiple sclerosis (MS) is a demyelinating autoimmune disease of the central nervous system[1] that predominantly affects young adults, causing long-term neurological deficits.[2] Despite progress in the management of MS, it remains one of the most common causes of neurological disability in young adults, affecting 1.3-million people worldwide.[3]

The etiology of MS isn't clear, but it's associated with an abnormal immune response of the central nervous system.[4] It's more common in women, with a 3:1 ratio of women to men, and the patterns of MS presentation can be significantly different among individuals.[5]

It's different manifestations are determined by the position of the brain lesions associated with MS. Generally, it causes physical disability, with symptoms such as deficits in coordination and muscle strength, paralysis, muscle spasms, dizziness, balance problems, difficulty walking, nystagmus, and urinary and/or bowel incontinence.

MS is also associated with cognitive and behavioral disabilities, restrictions on social participation and interpersonal relationships,[6] emotional problems, and stress that impact patients' quality of life.[7] People with MS can suffer from many psychological problems, such as anxiety, depression, and fatigue that impair their psychological well- being.[8]

In particular, the literature has shown that stress and chronic pain are the factors that most influence the quality of life and well-being of people with MS.[9] More than 50% report moderate or severe chronic pain[10]; it's one of the most severe symptoms in 8-32% of MS patients and frequently affects several parts of the body.[11]

One study found that about 90% of adults with MS suffer from persistent fatigue.[12] Stress, chronic pain, and fatigue are psychological dimensions that can be associated with other

disorders such as depression.[13] Stressful negative events and psychological suffering worsen neurological symptoms and increase the risk of additional brain injury.[14]

Drug treatments provide inadequate comfort for most people with these symptoms. Hypnosis offers the possibility of relief. It's a procedure that involves controlled modulation of cognition—such as awareness, volition, perception, and belief—by an external agent employing suggestion, such as a doctor, psychologist, or researcher[15,16] acting as a hypnotist or an individual practicing self-hypnosis.

Suggestions in hypnosis are usually ideas and imagery that are verbally expressed. A hypnosis session begins with an induction procedure that consists of suggestions for attentional focusing and relaxation, targeted to produce specific alterations in behavior. Suggestions can be intentional or nonintentional, verbal or nonverbal, and hypnotic or nonhypnotic, and the patient is always in control and can interrupt the process at any time.[17]

Cognitive hypnotherapy is a model of psychotherapy that integrates the knowledge of clinical cognitivism with hypnotherapy techniques. It gives the psychotherapist the tools to intervene with methodological rigor and is applicable for individuals suffering from emotional and cognitive disorders.[18] Hypnotic psychotherapy, however, isn't only an administration of suggestions but a real re-education of a patient regarding his or her adaptation to life and integration of personality.

Many studies have focused on the effectiveness of hypnosis in reducing pain, anxiety, and depression and improving a patient's quality of life in chronic diseases, such as cancer, stroke, and neurodegenerative diseases.[19,20,21,20] By applying hypnotherapy, a therapist can help patients with chronic conditions reduce negative emotions, can induce analgesia, and can encourage them to continue the rehabilitative treatment.[20,22] Some studies have described the effectiveness of hypnotherapy or hypnosis for chronic-pain conditions for people with MS,[23-25] to reduce fatigue[26,27] and stress and to improve quality of life.[28,29]

In addition, some studies have highlighted the therapeutic effects of self-hypnosis.[30,31] Self-hypnosis is the result of a self-induced hypnotic state. Jensen et al found that self-hypnosis training can reduce symptoms of disease and severity of pain in patients suffering from MS and chronic pain.[32] It's a noninvasive intervention and free of side effects, helping to improve patients' quality of life.[33]

The current study intended to examine the impact of hypnosis and hypnotherapy in the management of symptoms of people with MS, such as stress, chronic pain, an inferior quality of life, and a lack of psychological well-being.

METHODS

Procedures

A systematic narrative review was conducted to evaluate the impact of hypnosis techniques as a non pharmachological treatment, on the physical and psychological symptoms of individuals with MS. Studies were identified by searching the PubMed and Web of Science databases, including review articles and other studies for additional citations. The study was conducted at our Scientific Institute of Research in Messina.

The search strategy combined the following terms: (1) multiple sclerosis [MeSH Terms], OR (2) multiple [All Fields] AND sclerosis [All Fields], OR (3) multiple sclerosis [All Fields] AND hypnosis [MeSH Terms], OR (4) hypnosis [All Fields] AND multiple sclerosis [MeSH Terms], OR (5) multiple [All Fields] AND sclerosis [All Fields] OR multiple sclerosis [All Fields] AND hypnosis [MeSH Terms], OR (6) hypnosis [All Fields], OR (7) hypnotherapy [All Fields].

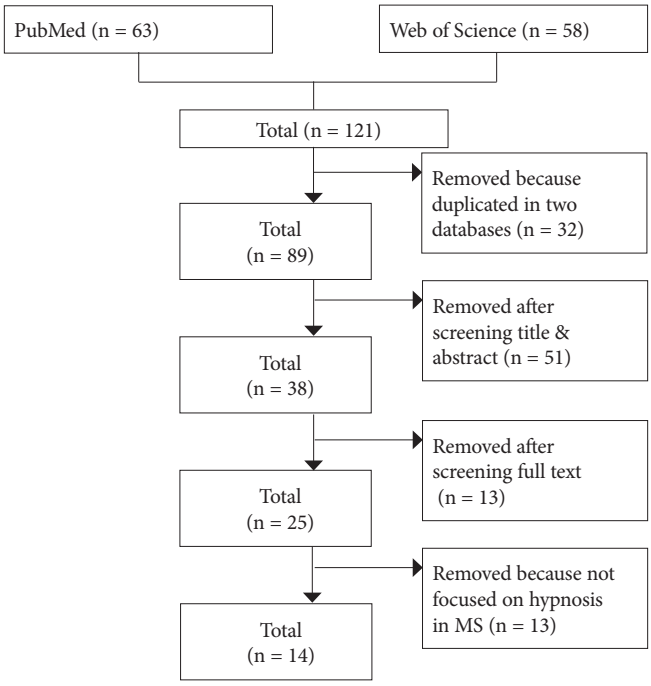
Articles were included if: (1) the research was published with peer review; (2) the sample population included MS patients; (3) the studies were about hypnosis as a nonpharmacological treatment, and (4) the text was in English. Studies were excluded if they were case studies of single patients.

The research team selected 121 studies and removed 32 duplicates. The team then screened 89 research articles, with 51 being removed after screening the title and abstract and 13 being removed after screening the full text, for not meeting the inclusion criteria. Of those 25 studies, the team reviewed only 14 articles because the 11 excluded articles were focused on nonpharmacological techniques other than hypnosis, such as autogenic training and progressive relaxation. (Figure 1).

RESULTS

One randomized trial evaluated the impact of treatment through self-hypnosis of 60 women with MS who had reported pain due to the disease.[1] Participants were assigned to a control group or a self-hypnosis group, in which the patients received six sessions self-hypnosis for 30 minutes each at 1 week intervals. The self-hypnosis started with a progressive relaxation. All participants

Figure 1. Methods Research Strategy



were assessed with a general health questionnaire (GHQ) and they had a scoring under 23 as an inclusion criteria. The level of pain was assessed by McGill Pain Questionnaire. The results showed a significant difference between the two groups; the perceived pain was significantly lower in the self-hypnosis group ($P < .005$). The result may indicate that self-hypnosis contributed to decrease the pain within a day, but this effects was not maintained in long-term after cessation of treatments.

A 1996 literature review conducted by Dane[32] found an improvement in muscle function and pain in MS patients after hypnosis treatment. A more recent review,[34] focusing on the treatment of neuropathic pain, found that the mental imagery training was used for treating of neuropathic pain in spinal cord injury, stroke and MS.

In a pilot study by Jensen et al,[35] 15 participants with MS underwent 4 sessions each of 4 different treatment conditions: (1) a psychoeducational intervention, (2) a self-hypnosis intervention, (3) cognitive restructuring, and (4) a combined cognitive restructuring and hypnosis intervention. The study design provided that patients were randomly assigned to receive four sessions each of Hypnosis and cognitive restructuring in one of two orders: (a) Hypnosis followed by Cognitive Restructuring; or (b) Cognitive Restructuring followed by Hypnosis. After that, participants performed four sessions of Cognitive Restructuring combined with Hypnosis. The study showed that the self-hypnosis intervention combined with the cognitive restructuring technique had more benefits in terms of decrease in pain intensity respect to the use of the two techniques separately.

Jensen et al[36] conducted a study to evaluate treatments with hypnosis and progressive muscle relaxation on chronic-pain intensity. Twenty-two MS patients were recruited in this study. 8 patients were assigned to the hypnosis group and the remaining 14 were randomly assigned to receive either hypnosis (HYP) and progressive muscle relaxation (PMR). Participants in the HYP group reported a significant reduction in chronic pain compared to participants in the PMR group. This study highlighted the efficacy of hypnotic treatment and the benefits were maintained at 3 months follow-up.

Ehde et al[37] evaluated 125 MS patients with a survey that assessed demographics data, level of pian, pain treatments, perceived effectiveness of treatments, and health care utilization. The study found that the 89.6% of patients surveyed o reported use of a variety of and multiple pain treatments. They found that psychological interventions such as hypnosis, for pain are rarely used by people with MS, respect to pain medication, that represented, the most commonly reported treatment with physical treatment. Few were rated as providing method relief. Results suggested that that pain seems to be treated inadequately for people with MS.

Mohammad et al[38] evaluated the effectiveness of cognitive hypnotherapy in a group on the psychological well-being of MS patients. Cognitive hypnotherapy is a combination of cognitive behavioral therapy (CBT) and clinical hypnosis, which is applicable for individuals suffering from emotional and cognitive disorders.[39] In Mohammad et al's research, 45 patients with MS were randomly assigned to an intervention group (n = 23) or a control group (n = 22). The intervention group participated in eight cognitive hypnotherapy sessions a week for 8 weeks as a group. The control group did not received any interventions. The cognitive hypnotherapy improved the psychological well-being of the intervention group. The results indicated that cognitive hypnotherapy had a significant effect on the total score of psychological well-being ($P < .05$).

Mohammad et al's[40] findings are in line with those of Sutcher's study.[41] That study consisted of case studies for three participants. The first severely affected patient had had MS for over 35 years; he had been confined to a wheelchair for a long time. The second had a recent diagnosis of MS and was minimally affected but already had difficulty walking and helped himself with a cane. The third, also minimally affected, had pain in his right leg. The study found that hypnosis was an effective treatment for decreasing participants' MS-associated symptoms, providing beneficial effects. All three showed an improvement in symptoms immediately or by several weeks after hypnosis treatment.

An exploratory study[42] examined the effects of Healing Light Guided Imagery (HLGI), a new variant of guided imagery. Results of these study suggested that this novel treatment could improve self-reported physical and mental well-being in patients with relapsing-remitting multiple sclerosis. The treatment was performed by a qualified practitioner. Eight of the sessions involved active HLGI; the first and final sessions was a completion sessions with little or no active treatment for a total of ten sessions 1 hour a week. Participants who completed the HLGI (n = 9) showed significant reductions in depressive symptoms and fatigue and achieved significant physical and mental improvements. The researchers suggested that the findings show that HLGI can improve physical and mental well-being in patients with relapsing-remitting multiple sclerosis.

Finally, two studies investigated techniques to improve treatment by hypnosis for MS patients. The first study[43] included 32 patients with chronic pain and/or fatigue. Patients were randomly assigned to 1 of 2 interventions mindfulness meditation or neurofeedback training or not received intervention. The three treatment conditions were six sessions in 3 weeks, for twice a week of neurofeedback training, followed by a single face-to-face hypnosis session. Six sessions in 3 weeks of mindfulness meditation training, followed by a single face-to-face hypnosis session and 3 weeks of a waiting period followed by a single face-to-face hypnosis session and then four audiotaped self-hypnosis training sessions. The findings suggested the potential for both neurofeedback and mindfulness to support response to hypnosis treatment. One intervention group also practiced neurofeedback and/or awareness techniques that were aimed at increasing slow-wave activity; the other intervention group didn't participate in those techniques. The study found that both neurofeedback and awareness are effective interventions in improving response to treatment with hypnosis.

The second study, a literature search,[43] examined the potential benefits of EEG neurofeedback for increasing responsiveness to self-hypnosis training for chronic pain

management. The study comprised 20 individuals with multiple sclerosis (MS) who received 5 sessions of self-hypnosis training—1 face-to-face session and 4 prerecorded sessions. Participants were randomly assigned to an intervention of EEG biofeedback (neurofeedback) training to increase ant the other group was assigned to a relaxation control condition. Patients treated with neurofeedback reported a reduction of pain than the other group. In according to the previous study this findings provided evidence about the importance of the hypnosis treatment combined to neurofeedback to increase the benefits in terms of chronic pain, than those who didn't receive the biofeedback.

DISCUSSION

The current review found that hypnosis can be an effective therapy that has beneficial impacts on the intensity of perceived pain, psychological well-being, mood disorders, and fatigue, and in addition, significantly improves physical functioning in MS patients. The current research team, however, would like to highlight that a limitation for its use is the absence of a standardized hypnotic protocol to treat the various typical symptoms of MS. In fact, the current review found that some studies used analgesic hypnosis; some studies combined hypnotherapy with cognitive behavioral therapy; and other studies compared self-hypnosis with another relaxation techniques.

The objective of the current review has been largely achieved, mainly because the studies agreed about the importance and validity of hypnotic treatment in the management of pain for MS patients. In particular, some studies that compared other relaxation techniques showed that hypnotherapy gave greater benefits in terms of symptomatic improvement.

The present review suggest two important conclusions on the use of hypnosis with MS. First, it's difficult to separate the effects of hypnosis from more generalized effects, therapeutic alliance, and psychotherapeutic intervention, because to achieve a good hypnotic treatment, it's important to increase the patient's confidence and develop a good relationship between the patient and therapist. Second, the current review has demonstrated that short-term improvements in muscular functioning can occur, beyond that which might be expected from simple attitudinal adjustment or interpersonal influence. However, because of the limited bibliography in the literature, these treatments need further research.

AUTHORS' DISCLOSURE STATEMENT

The authors have no potential conflicts of interest to disclose.

REFERENCES

1. Hosseinzadegan F, Radfar M, Shafiee-Kandjani AR, Sheikh N. Efficacy of self-hypnosis in pain management in female patients with multiple sclerosis. *International Journal of Clinical and Experimental Hypnosis.* 2016; 65(1):86-97.
2. Bienes G, Oliveira EML, Bichuetti DB. Multiple sclerosis. *Rev Bras Med.* 2014; 71(12):37-45.
3. World Health Organization (WHO). Atlas: Multiple sclerosis resources in the world. www.who.int/mental_health/neurology/ Atlas_MS_WEB.pdf
4. Amatya B, Young J, Khan F. Non-pharmacological interventions for chronic pain in multiple sclerosis. *Cochrane Database of Systematic Reviews.* 2018; Issue 12 (Art. No): CD012622
5. Compston A. Distribution of multiple sclerosis. In: Compston A, Ebers G, Lassmann H, McDonald I, Matthews B, Wekerle H editor(s); *McAlpine's Multiple Sclerosis*, 3rd ed. London: Churchill Livingstone, 1998, 63-100.
6. Khan F, Turner-Stokes L, Ng L, Kilpatrick T, Amatya B. Multidisciplinary rehabilitation for adults with multiple sclerosis. *Cochrane Database of Systematic Reviews.* 2007; 2.
7. Pottgen J, S Lau, Penner I, Heesen C, Moritz S. Managing neuropsychological impairment in multiple sclerosis: Pilot study on a standardized metacognitive intervention. *Int J MS Care.* 2015; 17(3):130-7.
8. Al-Asmi A, Al-Rawahi S, Al-Moqbali ZS, Al-Farsi Y, Essa MM, El-Bouri M, et al. Magnitude and concurrence of anxiety and depression among attendees with multiple sclerosis at a tertiary care hospital in Oman. *BMC Neurology.* 2015; 15(1):131.
9. Salehpoor GH, Rezaei S, Hosseininezhad M. Quality of life in multiple sclerosis (MS) and role of fatigue, depression, anxiety, and stress: A bicenter study from north of Iran. *Iran J Nurs Midwifery Res.* 2014; 19(6):593-9.
10. Ehde DM, Kratz AL, Robinson JP, Jensen MP. Multiple sclerosis rehabilitation: From impairment to participation. In M. Finlayson (ed). *Chronic Pain*. London, UK: Taylor & Francis, 2012, 199-226.
11. Foley PL, Vesterinen HM, Laird BJ, Sena ES, Colvin LA, Chandran S, et al. Prevalence and natural history of pain in adults with multiple sclerosis: Systematic review and metaanalysis. *Pain.* 2013; 154(5):632-42.
12. Finlayson M, Johansson S, Kos D. Multiple sclerosis rehabilitation: From impairment to participation. In M. Finlayson (ed). *Fatigue.* Boca Raton, FL: CRC Press, 2012, 69-100.
13. Alschuler KN, Ehde DM, & Jensen MP. The co-occurrence of pain and depression in adults with multiple sclerosis. *Rehabilitation Psychology.* 2013; 58:217-221.
14. Burns MN, Nawacki E, Kwasny MJ, Pelletier D, Mohr DC. Do positive or negative stressful events predict the development of new brain lesions in people with multiple sclerosis? *Psychol Med.* 2014; 44(2):349-59.
15. American Psychological Association. American Psychological Association - Division 30 Society of Psychological Hypnosis, 1993.
16. Ardigo S, Herrmann FR, Moret V, Derame L, Giannelli S, Gold G, et al. Hypnosis can reduce pain in hospitalized older patients: A randomized controlled study. *BMC Geriatr.* 2016; 16(1):14.
17. Halligan, PW, Oakley DA. Hypnosis and beyond: Exploring the broader domain of suggestion. *Psychology of Consciousness: Theory, Research, and Practice.* 2014; 1(2):105.
18. Dillworth T, Mendoza ME, Jensen MP. Neurophysiology of pain and hypnosis for chronic pain. *Transl Behav Med.* 2011; 2(1):65-72.
19. Rajasekaran M, Edmonds P, Higginson I. Systematic review of hypnotherapy for treating symptoms in terminally ill adult cancer patients. *Palliative Medicine.* 2005; 19(5):418-426. doi:10.1191/0269216305pm1030oa
20. Formica C, Micchia K, Cartella E, De Salvo S, Bonanno L, Corallo F, Arcadi FA, Giorgianni R, Marra A, Bramanti P, Marino S. Analgesic hypnotic treatment in a post-stroke patient. *Am J Clin Hypn*. Jan 2021; 63(3):192-201. doi: 10.1080/00029157.2020.1797622. PMID: 33617425
21. Dane JR. Hypnosis for pain and neuromuscular rehabilitation with multiple sclerosis: Case summary, literature review, and analysis of outcomes. *International Journal of Clinical and Experimental Hypnosis.* 1996; 44(3):208-231. doi:10.1080/00207149608416084
22. Zarren JI, Eimer BN. *Brief Cognitive Hypnosis: Facilitating the Change of Dysfunctional Behavior.* New York, NY: Springer Publishing Company, 2002, 212.
23. Jensen MP, Patterson DR. Hypnotic approaches for chronic pain management: Clinical implications of recent research findings. *American Psychologist.* 2014; 69:167-177.
24. Kohen DP. Chronic daily headache: Helping adolescents help themselves with self-hypnosis. *American Journal of Clinical Hypnosis.* 2012; 54:32-46.
25. Patterson DR, Hoffman HG, Weichman SA, Jensen MP, Sharar SR. Optimizing control of pain from severe burns: A literature review. *American Journal of Clinical Hypnosis.* 2004; 47:43-54.
26. Mendoza ME, Capafons A, Gralow JR, Syrjala KL, Suarez-Rodriguez JM, Fann JR, et al. Randomized controlled trial of the Valencia model of waking hypnosis plus CBT for pain, fatigue, and sleep management in patients with cancer and cancer survivors. *Psychooncology.* 2016.
27. Montgomery GH, David D, Kangas M, Green S, Sucala M, Bovbjerg DH, et al. Randomized controlled trial of a cognitive-behavioral therapy plus hypnosis intervention to control fatigue in patients undergoing radiotherapy for breast cancer. *Journal of Clinical Oncology.* 2014; 32:557-563.
28. Dayapoglu N, Tan M. Evaluation of the effect of progressive relaxation exercises on fatigue and sleep quality in patients with multiple sclerosis. *J Alternative Complem Med.* 2012; 218(10):983-7.
29. Artemiadis AK, Vervainioti AA, Alexopoulos EC, Rombos A, Anagnostouli MC, Darviri C. Stress management and multiple sclerosis: A randomized controlled trial. *Arch Clin Neuropsychol.* 2012; 27(4):406-16.
30. Anbar RD. Self-hypnosis for the treatment of functional abdominal pain in childhood. *Clinical Pediatrics.* 2001; 40:447-451.
31. Liossi C, White P, Hatira P. Randomized clinical trial of local anesthetic versus a combination of local anesthetic with self-hypnosis in the management of pediatric procedure-related pain. *Health Psychology.* 2006; 25:307-315.
32. Jensen MP, Hanley MA, Engel JM, Romano JM, Barber J, Cardenas DD, Patterson DR. Hypnotic analgesia for chronic pain in persons with disabilities: A case series abstract. *International Journal of Clinical and Experimental Hypnosis.* 2005; 53(2):198-228. doi:10.1080/00207140590927545
33. Bo S, Rahimi F, Goitre I, Properzi B, Ponzo V, Regaldo G, Mengozzi G. Effects of self-conditioning techniques (self-hypnosis) in promoting weight loss in patients with severe obesity: A randomized controlled trial. *Obesity.* 2018; 26(9):1422-1429. doi:10.1002/oby.22262
34. Kaur J, Ghosh S, Sahani AK, & Sinha JK. Mental imagery training for treatment of central neuropathic pain: A narrative review. *Acta Neurologica Belgica.* 2019.
35. Jensen MP, Ehde DM, Gertz KJ, Stoelb BL, Dillworth TM, Hirsh AT, et al. Effects of self-hypnosis training and cognitive restructuring on daily pain intensity and catastrophizing in individuals with multiple sclerosis and chronic pain. *International Journal of Clinical and Experimental Hypnosis.* 2010; 59(1):45-63.
36. Jensen MP, Barber J, Romano JM, Molton IR, Raichle KA, Osborne TL, et al. A comparison of self-hypnosis versus progressive muscle relaxation in patients with multiple sclerosis and chronic pain. *International Journal of Clinical and Experimental Hypnosis.* 2009; 57(2):198-221.
37. Ehde DM, Alschuler KN, Osborne TL, Hanley MA, Jensen MP, Kraft GH. Utilization and patients' perceptions of the effectiveness of pain treatments in multiple sclerosis: A cross-sectional survey. *Disability and Health Journal.* 2015; 8(3):452-456.
38. Mohammad M, Nazir HM, Shirali K, Sadegh H. The effectiveness of group-based cognitive hypnotherapy on the psychological well-being of patients with multiple sclerosis: A randomized clinical trial, *American Journal of Clinical Hypnosis* 2020; 62(4):364-379.
39. Alladin A, Amundson J. Cognitive hypnotherapy as a transdiagnostic protocol for emotional disorders. *International Journal of Clinical and Experimental Hypnosis.* 2016; 64(2):147-166.
40. Sutcher H. Hypnosis as adjunctive therapy for multiple sclerosis: A progress report. *American Journal of Clinical Hypnosis.* 1997; 39(4):283-290.
41. Case LK, Jackson P, Kinkel R, Mills PJ. Guided imagery improves mood, fatigue, and quality of life in individuals with multiple sclerosis: An exploratory efficacy trial of healing light guided imagery. *Journal of Evidence-Based Integrative Medicine.* 2018; 23:2515690X1774874.
42. Jensen MP, Battalio SL, Chan JF, Edwards KA, Day MA, Sherlin LH, Ehde DM. Use of neurofeedback and mindfulness to enhance response to hypnosis treatment in individuals with multiple sclerosis: Results from a pilot randomized clinical trial. *International Journal of Clinical and Experimental Hypnosis.* 2018; 66(3):231-264.
43. Jensen MP, Gianas A, George HR, Sherlin LH, Kraft GH., Ehde DM. Use of neurofeedback to enhance response to hypnotic analgesia in individuals with multiple sclerosis. *International Journal of Clinical and Experimental Hypnosis.* 2015; 64(1):1-23.