

Mindfulness-Based Interventions for Post Stroke Fatigue



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Submission: July 13, 2021; **Published:** July 26, 2021

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Abstract

Post-stroke fatigue (PSF), which affects up to 70% of stroke survivors, is characterized by a physical shortage of energy, increased tiredness and lack of initiative. This so-called “invisible symptom” reduces patients’ experience of wellness and their ability to complete everyday activities. PSF also interferes with patients’ adherence to treatment, negatively affecting rehabilitation processes. Given that number of clinical trials to study PSF is scarce, we currently lack information about specific treatments or possible medication for its management. Mindfulness-based interventions have been explored as alternatives to reduce fatigue among stroke patients. This mini-review has the objective of identifying and briefly discussing studies focused on the effectiveness of mindfulness to alleviate or reduce fatigue among stroke patients. It supports the notion that mindfulness-based interventions could potentially be used to reduce PSF based on its effectiveness on other neurological and psychological conditions.

Keywords: Mindfulness; Post-stroke fatigue; Stroke

Introduction

Stroke, or cerebrovascular accident is second main cause of death and long-term adult disability worldwide [1]. According to global prevalence estimates, approximately 80 million people are stroke survivors [1-2], all of which face a significant higher risk of a subsequent stroke within five years of their first episode [3]. Depending on the damage caused by the stroke, patients experience physical and psychological symptoms, including weakness, numbness, stiffness, pain, muscle paralysis, sleep problems, memory loss, depression, anxiety and problems related to reasoning, planning and judgment [4]. Healthy environments as well as novel rehabilitation approaches are required for the prevention and long-term management of stroke patients.

Up to 70% of stroke patients experience post-stroke fatigue (PSF), which is a multidimensional motor-perceptive, emotional and cognitive state [5]. Characterized by a physical shortage of energy, increased tiredness and lack of initiative, PSF reduces patients’ experience of wellness and negatively affects their ability to complete everyday activities [6]. Although there are no standard instruments to specifically measure PSF, healthcare professionals frequently use the Fatigue Severity Scale, the Fatigue Assessment Scale and the Multidimensional Fatigue Symptom Inventory for such purposes [5]. Assessments include performance in physical or mental activities and the patient’s feelings of tiredness, lethargy

and aversion. PSF might affect engagement in treatment, making it harder for stroke patients to feel in control during rehabilitation.

Since PSF has debilitating consequences and it is a predictor for death among stroke patients, it has become a research priority among health specialists, stroke survivors and caregivers interested in understanding its mechanisms and treatment [5,7]. Within the pool of alternatives to reduce PSF, mindfulness-based interventions have been recently explored as a promising approach because of its link to psychological health and well-being [6]. This mini-review has the objective of identifying and briefly discussing studies focused on the effectiveness of mindfulness to alleviate or reduce fatigue among stroke patients.

Mindfulness and mindfulness-based interventions

Mindfulness has its roots on Eastern Asian (Buddhist) philosophy, traditions and meditation practices, and it is generally described as a process of openly attending, with awareness, to one’s present moment experience [8]. This particular awareness and experience of the current moment is somehow the opposite state of being unintentionally mind wandering, running automatically, or overturning unwanted experiences [8]. The process of being mindful includes identification of sensations, emotions and thoughts, and focusing the attention in our

current actions and feelings to be fully aware of the body-mind connections. More than 30 years ago, Professor Jon Kabat-Zinn (University of Massachusetts Medical School), introduced the scientific use of mindfulness in medicine and clinical sciences and developed what is now called, mindfulness-based interventions. Initially, he created the stress reduction program, or mindfulness-based stress reduction (MBSR) program to treat patients suffering from chronic pain. It is currently the most well-known and frequently used mindfulness intervention in diverse medical and clinical scenarios [8].

The MBSR program focuses mostly on learning how to thoughtfully attend to body sensations through different exercises that can help a person to apply mindful awareness and deal with his/her stress [8]. An important general goal of mindfulness-based practices in the context of psychotherapy and counseling is to achieve a sense of equilibrium, through which patients and clients reach consciousness of their present moment, avoiding being overwhelmed by feelings of despair, depression, or anxiety [9]. Therefore, the MBSR program and other mindfulness-based interventions collectively intent to foster awareness of the here and now experience, enhancing the richness of daily life experiences and helping individuals to improve the quality of life [8].

Grossman et al. [10] carried out a comprehensive review and meta-analysis that included 20 studies (1,605 participants) on the use of MBSR for health purposes. They found that both controlled and uncontrolled studies showed similar effect sizes of approximately 0.5 ($p < 0.0001$) with homogeneity of distribution and concluded that the MBSR program is helpful to assist individuals to cope with clinical and nonclinical difficulties. Additionally, a review of empirical studies on the effects of mindfulness on psychological health concluded that mindfulness generates several positive psychological effects, including increased subjective well-being, reduced psychological symptoms and emotional reactivity, and better behavioral regulation [11]. More recently, Zhang et al. [12] reviewed mindfulness-based interventions and suggested that they are effective at improving various biopsychosocial conditions, including depression, anxiety, insomnia, addiction, psychosis, pain and hypertension. The authors also stated that such interventions are beneficial in healthcare settings, schools and the workplace, but highlighted the need to develop more high-quality studies measuring the efficacy of mindfulness.

Mindfulness and stroke

Several studies have explored the use of mindfulness-based interventions in stroke patients. For instance, Johansson et al. [13], tested a treatment with MBSR for mental fatigue in 18 stroke patients (and 11 with TBI). They found statistically significant improvements in terms of fatigue and concluded that MBSR may be a promising non-pharmacological treatment for mental

fatigue after a stroke or TBI. Lawrence and colleagues [14], carried out a systematic review of the benefits of mindfulness-based interventions (i.e., MBSR and mindfulness-based cognitive behavioral therapy, MBCT) following stroke and transient ischemic attack. After an exhaustive database search, they retrieved four studies (160 participants), in which mindfulness-based interventions were either delivered to groups or one-to-one. Results demonstrated a positive trend of the benefits of mindfulness-based interventions across a range of psychological, physiological and psychosocial outcomes, including mental fatigue and quality of life. They concluded that although further methodologically robust trials are necessary, stroke patients might benefit from mindfulness-based interventions to alleviate post-stroke symptoms [14].

Ulrichsen and collaborators [6] completed a systematic literature review and meta-analysis of four randomized controlled trials that applied mindfulness-based interventions to patients with neurological conditions or acquired brain injuries. They paid attention to the efficacy of mindfulness-based interventions for fatigue in patients with stroke, TBI and multiple sclerosis. In summary, researchers found an estimated effect size for the total sample of -0.37 with 95% confidence intervals (-0.58, -0.17) and concluded that mindfulness-based interventions may relieve fatigue in neurological conditions such as stroke. In spite of the positive results, they pinpointed that the effect size was moderate and also recommended further research to improve our current understanding of how mindfulness-based interventions affect fatigue in these clinical populations [6].

Discussion

On the one hand, the studies discussed above suggest that mindfulness-based interventions have positive effects on the relief of fatigue symptoms experienced by stroke patients. However, it is pinpointed the need of further studies, including controlled clinical trials, with strict methodological considerations (e.g., adequate sample sizes, longer follow-up periods) [12].

According to Gray [15], contemplative neuroscience research suggests substantial potential for the application of MBSR in shaping the brain's structure and function, offering optimism for future research on mindfulness, immune system regulation and inflammatory activity. Other studies are exploring the effects of mindfulness meditation on re-wiring the brain through neuroplasticity. As elegantly added by Gray, as the human brain carries the potential to shape and shift itself to fit our needs to varying degrees throughout adulthood, mindfulness meditation may be an avenue for harnessing this capacity for greater health and healing [15]. In the paper, Gray introduces a model for a Mindfulness-Based Recovery from Stroke (MBRfS), offering a path of supportive experience within stroke recovery.

Conclusion

The present literature review supports the growing notion that mindfulness-based interventions could potentially be used as evidence-based treatment to reduce PSF based on its effectiveness on neurological and psychological conditions.

Acknowledgement

This paper was supported by the Institutional Fund for Research, University of Puerto Rico, Río Piedras Campus.

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DOI: [10.19080/OAJNN.2021.15.555922](https://doi.org/10.19080/OAJNN.2021.15.555922)

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