WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 9, Issue 8, 400-406. Review Article ISSN 2277– 7105

REVIEW ON THE EFFICACY OF MIRROR THERAPY IN STROKE PATIENTS WITH FATIGUE IN STROKE

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Article Received on
26 May 2020,

Revised on 16 June 2020,
Accepted on 06 July 2020

DOI: 10.20959/wjpr20208-18083

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ABSTRACT

Mirror therapy is an intervention aimed at improving the functional movements of the paretic limb and it is a ground breaking noninvasive treatment, in which mirror is used to present the reverse image of a body part to the brain and it helps to recognize and integrate mismatch between proprioception and visual feedback of the removed and paralyzed body. Fatigue is divided into central and peripheral. Central fatigue may arise from the cerebral cortex, and also at spinal cord. The mechanisms of central fatigue is theorized to be due to impaired alpha motor cord neuron firing which will reduce a frequency of mean spectral on electromyography(mF-EMG). The objective of this study is the literature review on mirror therapy combined with exercise tasks on the function of the upper limbs and activities of daily living, pain, and visuospatial neglect in patients after stroke.

KEYWORDS: stroke, mirror therapy, upper extremity, acute stroke, chronic stroke, fatigue in stroke.

INTRODUCTION

In the neurorehabilitation scheme (video therapy) the daily actions with concomitant physical training of the observed actions focusing on the upper limbs and following a pilot study in chronic patients in an outpatient setting and currently designed a new clinical multicenter study dedicated to patients in the sub-acute after stroke using a home-based self-induced training and the capacity.[1]

Stroke is a disease of the central nervous system caused by partial loss of brain function, which can lead to motor disorders, perception disorders, language disorders, sensory disturbances etc., and two out of three patients experience damage to motor function in the upper limbs. Furthermore, stroke can bring about limitations in activities of daily living, such as eating and dressing and undressing also, disability in bodily functions develops in about 66% of patients and in activities of daily living in about 75% of patients.[2]

The upper limb role of stroke patients is therefore an important factor in everyday life which needs to be stressed in the field of rehabilitation. Various methods have been proposed for the rehabilitation of upper limb function in stroke patients including mirror therapy, which is a relatively recent procedure that restores the motor function of the upper limbs by causing brain reorganization. Mirror therapy is a psychological technique that uses the movements of the body's unaffected hand as visual feedback, mirrored in a mirror.[2] Mirror therapy is used to improve motor function after stroke. During mirror therapy, a mirror is placed in the patient's mid sagittal plane, thus reflecting movements of the non-paretic side as if it were the affected side.[3]

Mirror therapy uses visual information to encourage patients to concentrate on the movements of their non-paretic limbs and visual illusions to make the patients feel as if their two hands are moving simultaneously and symmetrically. In the cerebral hemisphere the visual illusions are activated, and this activation functions as the basis of a neurological mechanism for inducing brain plasticity. Studies have examined the effects of experiment or association methods of movement have light on how perception or acknowledgement is transformed into actual movement through a set of phases.[4]

Visual feedback training using a mirror is a technique that can lead to improved postural control by providing input on induced movements by reflecting the body image in the mirror and stating that when visual feedback was received from a mirror positioned in front of the femoral amputees, a substantial decrease was observed in the corresponding sway distance measurement. This includes the superimposition on the affected extremity of the representations of safe extremity movements for the patient to view them as though their extremity were moving.[6]

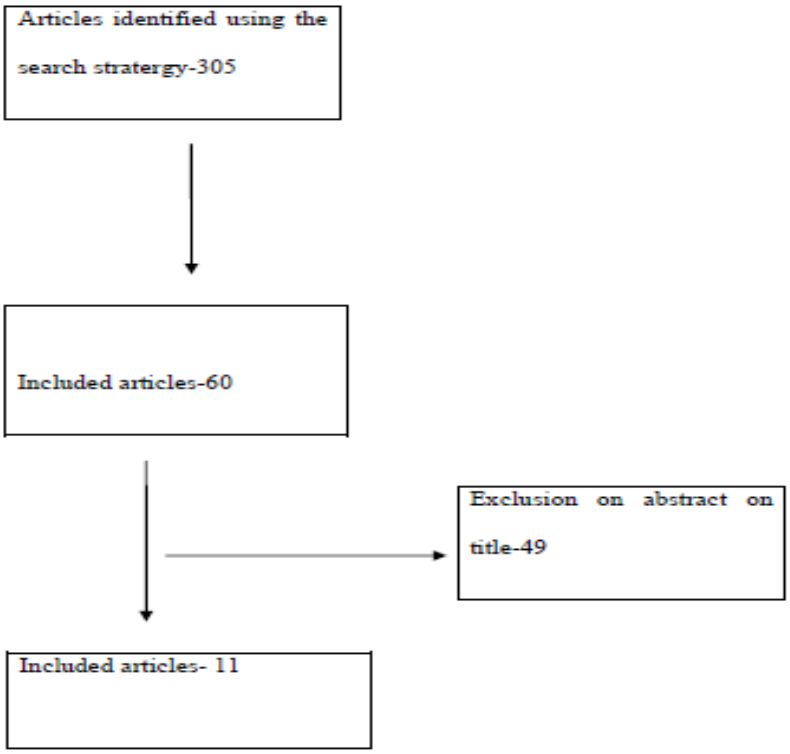
A paretic upper extremity (UE) is a common outcome of a stroke, and UE function is important in most daily living activities (ADLs) and thus UE motor recovery can help to

preserve independence and enhance the quality of life for stroke victims. There are many evidentiary therapies for rehabilitation from post-stroke UE. Many muscle strength-improvement procedures are labor intensive and include one-on-one consultation with a therapist for several weeks. But mirror therapy (MT) is a simple, inexpensive, and patient-driven treatment that can provide better EU capacity.[7] It is an alternative way to create a visual illusion of a proper movement in paretic hand after stroke. The theoretical mechanisms of mirror therapy are supported by mirror neuron system activation in the brain what may stimulate a cortical reorganization.[8] The aim of the study is to find out the literature on the efficacy of mirror therapy in stroke patients

METHODOLOGY

This was on review of literature and searched by Google scholar, PubMed for Last 5years and the Language is in English.

Articles obtained



Review of literature

Denis ertelt et al[1]: Conducted a study in 2012 to provide mirror therapy as an extension of therapeutic procedures for recovery after stroke and emphasize the importance of action

perception in neuro rehabilitation therapy and concluded that that mirror therapy is useful for stroke patients.

Kyunghoon kim et al[2]: Conducted a study in 2015and demonstrated that mirror therapy is more effective for the training of stroke patients to improve their upper limb function and activities of daily living and concluded that that the intergroup differences in upper limb function and activities of daily living after four weeks of therapy and the mirror therapy group showed greater improvement.

Holm thieme et al[3]: Conducted a study in 2016 to provide the effectiveness of mirror therapy for improving motor function, activities of daily living, pain, and visuospatial neglect in patients after stroke and gave a clear conclusion that it can be drawn if mirror therapy should replace other interventions for improving motor function.

Jin-young park et al[4]: Conducted a study in 2015 and showed positive effects on upper-extremity function and activities of daily living in chronic stroke patients and in contrast to previous mirror therapy studies which were conducted with sub-acute stroke patients this study focused on chronic stroke patients and concluded that mirror therapy is effective in improving paretic upper extremity function and activities of daily living in chronic stroke patients.

Tae-sung in et al[5]: Conducted a study in 2016 and the mirror therapy examined that the effects of visual feedback from a mirror for patients with stroke in a standing position on various supporting surfaces and the sway distance and speed were the highest when the subjects were standing on a stable surface with their eyes closed and concluded that visual feedback from a mirror therapy is beneficial for improving balance ability during quiet standing on an unstable surface in patients with stroke.

Nigar gurbuzet al[6]: Conducted a study in 2016 and examines that mirror therapy is a simple, inexpensive, and patient-oriented treatment and functional brain imaging studies conducted on healthy individuals have shown that the ipsilateral primary cortex excitability increases when observing the mirror image of the hand during unilateral hand movements and concluded that mirror therapy in addition to conventional rehabilitation program was found to provide additional benefit in motor recovery of the upper extremity in stroke.

Youngju park et al[7]: Conducted a study in 2015 and examines that the patient observes the movement of the unaffected hand in a mirror and is given the impression that the affected hand is movingand consider mirror therapy is an effective form of intervention for upper extremity function and self-care and concluded that the mirror therapy with tasks to be an effective form of intervention for upper extremity function and self-care.

Alina radajewskaet al[8]: Conducted a study in 2016 and examines that the review of methodological variability of applying mirror therapy to patients after stroke has been presented and the review highlights the benefit effect of mirror therapy on motor recovery and activities of daily living after stroke and gave a clear conclusion that the benefit effect of mirror therapy on motor recovery and activities of daily living after stroke is useful.

Ipek yeldan et al[9]: Conducted a study in 2015 and it has been reported that application of mirror therapy may result in beneficial effects on upper extremity motor control in chronic stroke patients, excluding those with severe arm paresis and concluded that mirror therapy has no additional effect on functional improvement of upper extremity function in acute stroke patients.

Christian dohle et al[10]: Conducted a study in 2009 and has been reported and demonstrated that application of mirror therapy in the early phase after stroke resulted in functionally relevant improvements in motor, sensory, and attentional domains and concluded that mirror therapy in stroke is a promising method to improve sensory and attention deficits and to support motor recovery in a distal plegic limb.

Kil-Byung lim et al[11]: Conducted a study in 2016 and has been reported that the mirror therapy containing functional task was effective in terms of improving the upper extremity functions and activities of daily living in patients with sub-acute stroke and concluded that containing functional tasks exerted significant effects in terms of improving the upper limb functions and the ability to perform activities of daily living among patients with subacute stroke.

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