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Research Article

TO FIND THE EFFECTIVENESS OF FACIAL NEUROMUSCULAR RE-EDUCATION VS MIME THERAPY TO IMPROVE FACIAL SYMMETRY IN PATIENTS WITH ACUTE BELL'S PALSY

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A B S T R A C T

Background: The output of mind is communicated to others in the form of expressions. The Bell's palsy is a lower motor neuron type of lesion, which may be primary or secondary to any other lesions or injuries, disease or disorders, the facial nerve and its branches supply the muscles of the face, which are responsible for their motor activity. **Aim of the study:** The aim of the study is to find the effectiveness of facial neuromuscular re-education vs. mime therapy to improve facial symmetry in patients with Acute Bell's palsy. **Need of the study:** To date, there is no study that directly compares the effectiveness of Facial neuromuscular re-education with Mime therapy using Sunny Broke Facial Grading System. **Methodology :** Study Design is Quasi Experimental with comparative study typebin a convenient sampling method and study done in Madha Medical College Hospital & Research institute in 2 week duration **Inclusion Criteria:** Acute unilateral Bell's palsy referred by physician or otolaryngologist, Age between 18-60 years OF Both Genders. EXCLUSION CRITERIA are Decompression surgeries of facial nerve, Oral dentures and metal implants on face, Skin infection, Diseases of central nervous system, Sensory loss over the face, Recurrent facial paralysis, Surgical re-construction of facial nerve. Procedure: Group A and Group B received mime therapy & neuromuscular re-education respectively. **Results:** the results of this study concludes that facial neuromuscular re education is found to be more effective than mime therapy on facial symmetry in patients with acute Bell's palsy.

INTRODUCTION

"Face is the index of the mind"

The output of mind is communicated to others in the form of expressions. Bell's palsy is named after SIR CHARLES BELL, a Scottish surgeon of 19th century in 1821. He was the first to describe the condition and linked it to be a problem with facial nerve[1]. The Bell's palsy is a lower motor neuron type of lesion, which may be primary or secondary to any other lesions or injuries, disease or disorders, the facial nerve and its branches supply the muscles of the face, which are responsible for their motor activity. The disorder which is not related to stroke is the most common cause of facial paralysis. Generally, Bell's palsy affects only one of the paired facial nerves and one side of the face, however in rare cases, it can affect both sides[1].

Bell's palsy is characterized by an acute, unilateral, partial or complete paralysis of the face, which may occur with mild pain, numbness, increased sensitivity to sound and altered taste[9]. Bell's palsy remains idiopathic but a proportion may be caused by reactivation of herpes viruses from cranial nerve ganglia. Initially medical management has to be started with prednisolone and cortisone 1 mg/kg/day divided into 3 doses per day for 7 to 10 days. Conventional physiotherapeutic treatment consists of electrical stimulation, massage and strapping[18]. Electrical stimulation is also known as neuromuscular electrical stimulation (NMES) is the elicitation of muscular contraction using electric impulses, the impulses are generated by a device and deliveries through electrodes on the skin in direct proximally to the muscle contract[18].

Electrical muscle stimulation is an internationally accepted and proven technique of treating muscular weakness the EMS invented by JOHN FARADAY in 1831, benefits of electrical muscle stimulation is relaxation of muscle spasms prevention or retardation of disuse atrophy, increasing local blood circulation, muscle re-education maintaining or increasing range of motion[1]. The Electrical muscle stimulation units send comfortable impulse through the skin that stimulates the nerves in the treatment area, because the stimulation of nerves and muscles may be accompanied by electrical pulses. This modality can help prevent disuse atrophy, Accordingly incapacitated patients can receive therapeutic treatment to create involuntary muscle contractions thereby improving and maintaining muscle tone without actual physical activity[1].

Facial neuromuscular re-education is a process of facilitating the return of intended facial movement patterns and eliminating unwanted patterns of facial movement and expression. It is a process of relearning facial movement using specific and accurate feedback to

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Facilitate facial muscle activity is functional patterns of facial movement and expressions and Suppress abnormal muscle activity interfering with facial function. Facial neuromuscular re-education is a conservative approach to facial rehabilitation. It offers outpatient rehabilitation services designed to regain symmetrical facial movement and to reduce or eliminate associated speech and swallowing problems. It consists of evaluation of facial impairments and functional limitation, guided training sessions of correct movement patterns and instruction is a specific facial movement exercise programme[18].

JAN BRONK, a mime actor, and Pieter Devriese an Otolaryngologist, are the founders of MIME therapy. They believed that when a patient is unable to form facial expressions, then the focus of treatment must be on the whole body. Bronk and Devriese theorized that a combination of massage, breathing exercises and relaxation exercises would help to relax the entire body, which would in turn relax the face. Specific exercise would help patients to regain their facial symmetry, by re-training their facial muscle to make facial expressions, current mime therapist credits Bronk also recognized for using emotional expressions as a major element of regaining nerve control the face[9].

Initially Bronk and Devriese, the patients facial paralysis before starting mime therapy for treatment this was to ensure that a patients synkinesis (involuntary facial movements such as grimacing that accompany voluntary movements such as closing of the eyes) was not going to worsen[9].

Methodology

Study Design is Quasi Experimental with comparative study typebin a convenient sampling method and study done in Madha Medical College Hospital & Research institute in 2 week duration

Inclusion Criteria: Acute unilateral Bell's palsy referred by physician or otolaryngologist, Age between 18-60 years OF Both genders.

Exclusion Criteria are Decompression surgeries of facial nerve, Oral dentures and metal implants on face, Skin infection, Diseases of central nervous system, Sensory loss over the face, Recurrent facial paralysis, Surgical re-construction of facial nerve.

***Materials*:** Electrical Stimulator**,** Water**,** Cotton**,** Powder**,** Balloon**,** Straw, Mirror.

Procedure

Subjects referred by the physician, were informed about the procedure and a written informed consent was obtained from subjects who fulfill inclusion criteria. Subjects were allocated into two groups, each group consisting of 12 subjects. Electrical Stimulation was given to both the groups for 6 days per week for 2 weeks. Group A and Group B received mime therapy & neuromuscular re-education respectively.

***Electrical Stimulation*:** Position of the patient: Supine lying Electrode placement: Indifferent electrode placed under the nape of the neck. Active electrode placed over the motor point of the affected facial muscles and the nerve trunk. Type of the current: Intermittent galvanic current - 300ms (facial muscles) faradic current (facial nerve trunk).

Group A (Mime Therapy): The patients were taught to massage the face and neck for 10-15min which consisted of effleurage and kneading both sides of the face. Stretching exercises of the affected side were followed to relieve mimetic muscles involved in synkineses. Participations were taught to recognize tension and to feel the differences between tension and relaxation. Basic exercises (forehead wrinkle, eye closure, smile, snarl, lip pucker) with variations in amplitude and speed, exercises for one side of the face to control separate movements, relaxation of the lower jaw, exercises of the mouth and the eye were taught. Eye and lip closure exercises were taught. A mirror was used for feedback. Mime therapy aims to develop a conscious connection between the use of certain muscles and facial emotional expression. The exercises are performed in two ways. Working from the uses of certain muscles towards an expression. Working from an expression as a starting point for a movement[9].

***Basic Exercises of Mime Therapy*:** Forehead Wrinkle (Frontalis, Corrugator Supercilii)**,** Eye Closure (Orbicularis Oculi, Relaxatation Of Levator Palpebrae Superioris)**,** Smile (Zygomaticus Major Levator Anguli Oris)**,** Snarl (Nasalis, Levator Labii Superioris), Lip Pucker (Incisivii Labii Superioris & Inferiouis)

Group B (Neuromuscular Re-Education)

Patients in the facial neuromuscular re-education group were treated with techniques that were tailored to each patient. To avoid fatigue, patients were instructed to do only 5-10 repetitions of facial exercises three times a day in the initial stages. The facial exercises are eye closure, eye brow raise, frown, smile, snarl, pucker and pout. Patients were instructed to do symmetrical facial movements on the affected side without allowing the voluntary movement on the unaffected side to distort the movement. Resistance was applied only to the isolated movements without causing mass action or synkinesis. Patient was advised to concentrate on the quality of the exercises and not on the quantity[18].

Basic Exercises of Neuromuscular Re-Education: Eye Closure (Orbicularis Oculi, Relaxatation Of Levator Palpebrae Superioris)**,** Eye Brow Raise (Frontalis)**,** Frowning (Corugator Supercilii, Procerus), Smile (Zygomaticus Major Levator Anguli Oris)**,** Snarl (Nasalis, Levator Labii Superioris)**,** Lip Pucker (Incisivii Labii Superioris & Inferiouis)**,** Pout (Orbicularis Oris Superiorus, Mentalis & Depressors)

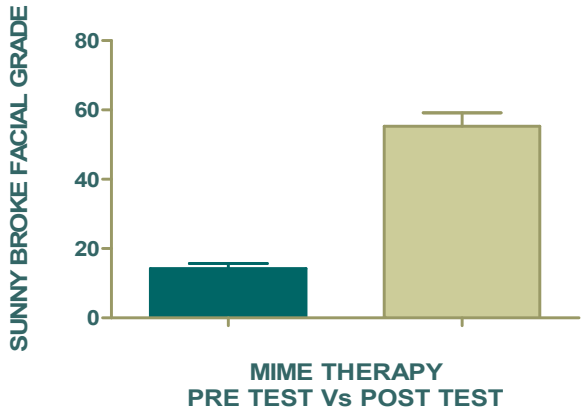
STATISTICAL METHODS

- The collected data were tabulated and analyzed using descriptive and interferential statistics.
- To assess all the parameters, mean and standard deviation were used.
- To find out the changes in Sunnybrook Facial Grading System (SBFGS) between pre test and post test, paired't' test was adopted.
- Independent't' test was used to compare the mean values of all parameters.

Table 1 Pre and post test values of sunnybrook facial grading system (sbfgs) of group a

Group a	N	Mean	Sd	Df	T value	Table value	Sig P =.05
Pre test	12	14.25	4.974	11	12.513	1.796	0.000
Post test	12	55.333	13.220				

In this table infers that there was significant difference in pre and post tests of group A at p<0.05

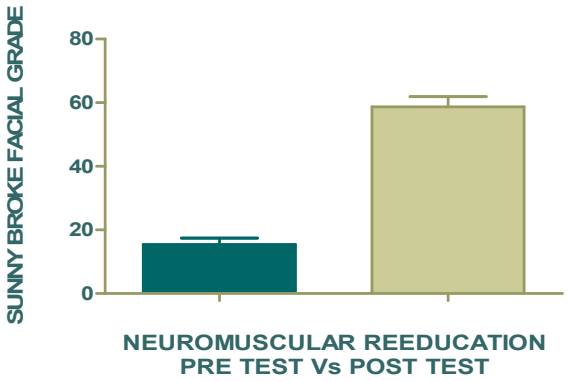


Graph 1 Graphical representation of pre and post test mean values of sunnybrook facial grading system (sbfgs) in group a

Table 2 Pre and post test values of sunnybrook facial grading system (sbfgs) of group b

	N	Mean	Sd	Df	T	Table val	Sig P =.05
Pre test	12	15.416	6.934	11	19.251	1.796	0.000
Post test	12	58.666	11.211				

In this table infers that there was significant difference in pre and post test of group B at p<0.05.



Graph 2 Graphical representation of pre and post test mean values of sunnybrook facial grading system (sbfgs) in group b

Table 3 Post test values of sunnybrook facial grading system (sbfgs) of group a and group b

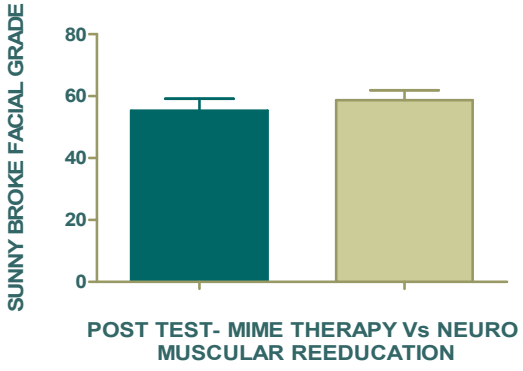
Post test	N	Mean	Sd	Df	T value	Table value	Sig(p=.05)
Group a	12	55.333	13.220	23	0.666	2.069	0.512
Group b	12	58.666	11.211				

In this table infers that there was not significant in pre and post tests of group A and group B at p > 0.05.

RESULTS

According to table 1, there was statistically significant difference for facial symmetry in Sunnybrook facial grading system between the pre test and post test of group A at (p<.05). According to table 2, there was statistically significant difference for facial symmetry in Sunnybrook facial grading system between the pre test and post test of group B at (p<.05).

According to table 3, the mean Post test SBFGS score for Group A and Group B subjects were 55.33 and 58.66 respectively. Comparison of Post test values of Sunnybrook facial grading system for Group A and Group B subjects by unpaired t test showed that there was statistically not significant difference with t value =0.666 at (p >0.05).



Graph 3 Graphical representation of pre and post test mean values of sunnybrook facial grading system (sbfgs) in group b

DISCUSSION

The clinical implication is that mime therapy is a good treatment choice for people with acute Bell's palsy patients. The cost of the intervention is relatively low because the amount of professional support is small since a home program is an integral part of the treatment.

In this study, there was an improvement in resting symmetry and symmetry of voluntary movement and synkinesis was expressed as a higher composite score of the Sunnybrook facial grading system.

The finding of a prospective randomized study for assessing the effects of facial neuromuscular re-education over conventional therapeutic measures in patients with Bell's palsy and found that targeted re-education lead to improvement facial expressions. There was a statistically significant change between pre and post treatment scores of Sunnybrook facial grading system of spontaneous recovery in the acute stage of Bell's palsy may heal account for this.

Facial neuromuscular re-education is an effective technique in improving the facial symmetry and hence could be used as the treatment of choice in patients with Bell's palsy. This may be attributed to task-specific controlled training of facial muscles.

The results of this study indicate that patients treated with facial neuromuscular re education group had clinically significant effect on improving the facial expression of patients with acute Bell's palsy. Observations made in this study conform the anticipated outcomes, where mime therapy group involving two weeks periods promoted marked improvement in facial expressions. The effects of mime therapy may also be examined in later stage of the Bell's palsy the relationship between facial asymmetry and psychosocial handicaps (such as impaired communication, low quality of life, depression) could also be investigated. Finally a study of theoretical background responsible for the effectiveness of mime therapy is recommended. limitations of the study are Sample size was small, Long term effects were not analyzed and Independent effect of each treatment was not studied. Recomendation of the study are A Study with long term follow up can be done, Larger sample size would yield better results, Dominant and Non- Dominant side involvement can be analyzed separately, Compare the effects on sex difference and Inclusion of any other valid and reliable advanced assessment scales.

CONCLUSION

Thus the results of this study concludes that facial neuromuscular re education is found to be more effective than mime therapy on facial symmetry in patients with acute Bell's palsy. However, there was no significant statistical difference in facial neuromuscular re education and mime therapy. Thus these findings have implications in the management of patients with facial neuromuscular re education to improve facial symmetry, voluntary movements and control synkinesis.

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