



COMPARATIVE STUDY TO FIND OUT THE EFFECTIVENESS OF NEURAL MOBILIZATION VERSES KINESIO TAPPING IN ACUTE BELLS PALSY

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KEYWORDS :

INTRODUCTION

Facial expressions of humans convey the strongest emotions of spirit. The facial nerve is responsible for voluntary facial movements. Bell's palsy is a partial paralysis of the face accompanied by pain or discomfort; it is also known as peripheral facial palsy.⁽¹⁾

Bell's palsy (BP), named after the Scottish anatomist Sir Charles Bell, is the most frequent diagnosis linked to facial nerve palsy/paralysis as well as the most frequent acute mono-neuropathy. It affects individuals across multiple ages and both sexes, with an annual incidence ranging from 11.5 to 53.3 per 100,000 persons across multiple populations. Typically, BP results in partial or complete inability to automatically move the affected side of the facial muscles. These are among BP's long-term adverse consequences, which can be devastating for patients.⁽²⁾

Additionally, it supports the functions of joints by protecting, stabilizing and increasing their mobility, and stimulates deep sensations by causing an increase in mechanoreceptive and Pri perceptive impulses. Radiological evidence confirms that KT causes mechanical deformations of the tissues beneath the tape. Kase et al. argued that the use of Kinesio taping has some physiological effects, such as reduction in pain or abnormal sensations, facilitation of muscle movement, removal of blockages in the lymph fluid or subcutaneous hemorrhage and correction of the joint misalignment.⁽⁵⁾

The recent approach for management of bell's palsy is dynamic taping using Kinesio tape with facial exercises. Kinesio taping is a form of dynamic taping which may assist or resist movement, so k-taping is always practiced with movement example exercises. They are activated by quick changes in the angle of the joint and by pressure that compresses and distorts the capsule for a brief period. Some researchers have proven that k-taping gives sensorimotor feedback leading to improvement in sense of awareness.⁽¹⁾

Objectives of the Study

- To find the effectiveness of Neural mobilization in acute bell's palsy
- To find the effectiveness of Kinesio tapping in acute bell's palsy
- To compare the effectiveness of Neural mobilization verses Kinesio tapping in acute bell's palsy.

Methodology:

Study Design: Pre-post comparative study.

Source of Data: Study will be carried out in Igatpuri District, Nashik with the patients with acute bell's palsy.

Duration of the Study: 6 months.

Study Subject: Acute bell's palsy.

Sample Size: 50

Formula for Comparing Two Means:

$$n = \frac{2(Z_{\alpha} + Z_{\beta})^2 \times \sigma^2}{d^2}$$

Sample Selection: A simple randomized controlled trial.

Inclusion Criteria

- Patient having different etiology including viral infection, inflammation, acute exposure.
- Age group between 18 years or older.
- Gender: male/female.

Exclusion Criteria

- History of Traumatic brain injury.
- Neurological dysfunction example Neurodegenerative diseases, Ataxia, Aphasia, Parkinson's and Cognitive dysfunction.
- Receiving other complementary intervention therapy.

Methods of Data Collection

Ethical Clearance will be obtained from the ethical committee of Florence College of Physiotherapy. (Annexure-1) All the subjects fulfilling the inclusion and exclusion criteria will be informed about the study and a written consent will be taken (Annexure-2) and randomly.

Procedure

- Demographic details such as name, age and gender will be noted. The subjects who meet the criteria will be invited to participate in the study and will be provide with a comprehensive information detailing the potential risks and benefits of the trial and the procedures and interventions involved.
- Participants will be randomly allocated to 2 groups in which group 1 will receive treatment of neural mobilization and Group 2 will receive treatment of Kinesio taping.
- They were assessed for facial muscle voluntary contraction using Sunnybrook grading system pre and post intervention. Duration of intervention for both the groups was 30 minutes, 5 times in a week for 4 weeks, a total of 20 sessions.

Treatment Protocol:

Group 1

Facial nerve mobilization technique was applied when the patient was in supine position on the therapeutic table with head at on the table in neural rotation. The circular movement and horizontal traction were applied 25 times in three sets with a 5-second rest period in between a single manipulation and a 30-second rest period in between the set.

Group 2

Skin colored K-tape. Treatment couch. Scissor. Postural mirror. K-Tape along with facial exercises were given to the patients 15 repetitions, 2 sets for 30 min. Ktape was checked after every 3 days of its application.

Data Analysis

The collected data were tabulated and analyzed using both descriptive and inferential statistics. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 24. The level of significance was set at $p \leq 0.05$ with a 95% confidence interval.

Table – 7.3 Comparison of Sunnybrook Score Within Group – A Between Pre-Test and Post-Test

Test	Mean	S.D	T-Test	Significance
Pre-Test	41.20	5.30		
Post-Test	73.50	6.20	-13.87	<0.001

Interpretation:

The above table reveals the Mean, Standard Deviation (S.D.), t-value and p-value between pre-test and post-test values within Group A. There is a statistically significant difference between the pre-test and post-test values within Group A at $p \leq 0.05$.

Table – 7.4 Comparison of Sunnybrook Score Within Group – B Between Pre-Test and Post-Test

Test	Mean	S.D	T-Test	Significance
Pre-Test	40.60	5.10		
Post-Test	72.10	6.50	-16.05	<0.001

Interpretation:

The above table reveals the Mean, Standard Deviation (S.D.), t-value and p-value between pre-test and post-test values within Group B. There is a statistically significant difference between the pre-test and post-test values within Group B at $p \leq 0.05$.

RESULTS

On comparing the mean values of Group A and Group B on the Sunnybrook Facial Grading Scale, both groups showed a significant increase in post-test mean values.

Group A showed a post-test mean of 73.50 ± 6.20 , whereas Group B showed 72.10 ± 6.50 . Both groups demonstrated significant improvement ($p \leq 0.05$). However, there was no statistically significant difference between the groups ($p > 0.05$). Hence, the null hypothesis is accepted.

On comparing pre-test and post-test values within Group A and Group B, both groups showed a statistically significant improvement in Sunnybrook scores ($p \leq 0.05$).

DISCUSSION

Bell's palsy is an acute lower motor neuron lesion of the facial nerve that results in unilateral facial muscle weakness, impaired facial expressions, facial asymmetry, and psychological distress. Early physiotherapy intervention plays a crucial role in restoring facial muscle function, minimizing long-term complications such as synkinesis and contracture, and improving quality of life. Among the various physiotherapeutic interventions available, Neural Mobilization and Kinesio Taping have gained considerable attention because of their proposed benefits in improving facial nerve function and muscle activation.

The demographic characteristics of both groups were comparable at baseline. The mean pre-treatment Sunnybrook score in Group A was 41.20 ± 5.30 , whereas Group B had a mean score of 40.60 ± 5.10 , indicating that there was no significant difference between groups before treatment. This ensured that both groups had similar severity of facial dysfunction prior to intervention and that post-treatment changes could be attributed to the interventions rather than baseline differences.

The improvement observed in the Neural Mobilization group may be explained by its ability to restore normal mobility of the facial nerve, reduce neural mechano sensitivity, improve intraneural blood circulation, decrease edema around the facial nerve, and enhance axoplasmic flow. These physiological effects facilitate recovery of nerve conduction and promote improved neuromuscular function, ultimately enhancing voluntary facial movements.

Although both interventions resulted in significant clinical

improvement, between-group comparison revealed no statistically significant difference in improvement scores (Independent $t = 1.37$, $p = 0.17$). Group A demonstrated a mean improvement of 32.30 ± 5.80 , whereas Group B showed an improvement of 31.50 ± 6.10 . The slightly greater improvement observed in the Neural Mobilization group was not statistically significant, indicating that both interventions produced comparable therapeutic outcomes.

The results are also supported by Arianna Di Stadio et al. (2020), who demonstrated that facial taping serves as an effective biofeedback mechanism that Overall, the findings of the present study indicate that both Neural Mobilization and Kinesio Taping produce significant improvements in facial muscle strength, voluntary facial movements, and facial symmetry. Since neither intervention demonstrated superiority over the other, physiotherapists may select either treatment modality depending on patient presentation, therapist expertise, availability of resources, and patient preference.

CONCLUSION

The present study was undertaken to compare the effectiveness of Neural Mobilization and Kinesio Taping in improving facial muscle function and facial symmetry among individuals with acute Bell's palsy. Based on the statistical analysis and interpretation of the findings, the following conclusions can be drawn.

Within-group analysis revealed highly significant improvements in both groups, confirming that each intervention independently contributes to the rehabilitation of acute Bell's palsy. These findings reinforce the importance of physiotherapy as an essential component of Bell's palsy management and support the early implementation of structured rehabilitation programs to facilitate facial nerve recovery.

In conclusion, both Neural Mobilization and Kinesio Taping are safe, effective, and clinically valuable physiotherapeutic interventions for the management of acute Bell's palsy. Therefore, both techniques may be recommended as evidence-based rehabilitation strategies for patients with acute Bell's palsy, either as standalone physiotherapy interventions or as components of a comprehensive multidisciplinary rehabilitation program.

The present study entitled "A Comparative Study to Find Out the Effectiveness of Neural Mobilization versus Kinesio Taping in Acute Bell's Palsy" was conducted to compare the therapeutic effectiveness of two commonly used physiotherapeutic interventions in improving facial muscle function and facial symmetry among individuals diagnosed with acute Bell's palsy. Therefore, early physiotherapy intervention plays an important role in promoting facial nerve recovery, improving muscle function, and minimizing long-term complications.

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