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COMPARATIVE EFFECT OF MIME THERAPY WITH SENSORY EXERCISES VERSUS CONVENTIONAL THERAPY AMONG BELLS PALSY PATIENTS

Original Research

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ABSTRACT

Background: Bell's palsy is an acute peripheral facial paralysis involving the seventh cranial nerve, often presenting with facial asymmetry and loss of motor function. Rehabilitation is essential for restoring function, with interventions ranging from conventional physiotherapy to advanced therapies like mime therapy combined with sensory exercises. These approaches aim to improve facial symmetry, emotional expression, and motor control, offering holistic management for patients with mild to moderate facial nerve dysfunction.

Objective: To evaluate the effects of mime therapy combined with sensory exercises versus conventional physiotherapy in patients with Bell's palsy.

Methods: This randomized clinical trial included 40 patients aged 18 to 65 years, recruited from Jinnah Hospital and Mayo Hospital, Lahore, using purposive sampling. Participants had unilateral facial nerve dysfunction classified as Grades II-IV on the House-Brackmann scale, with symptoms lasting less than six months. Patients with severe dysfunction (Grades V-VI) or comorbid neurological disorders were excluded. Group A received mime therapy combined with sensory exercises, while Group B underwent conventional physiotherapy. Both groups received therapy for ten weeks, with four sessions per week. Facial function was assessed pre- and post-treatment using the Sunnybrook Score and the House-Brackmann grading system. Data analysis was performed using SPSS version 22.

Results: Group A demonstrated a significant improvement in Sunnybrook scores, increasing from 46.0 ± 5.0 to 70.2 ± 6.5 ($p = 0.015$), with a paired difference of 24.2 ± 3.0 ($p < 0.001$). Group B showed moderate improvement in House-Brackmann grades, increasing from 45.0 ± 4.8 to 60.1 ± 6.2 ($p = 0.028$), with a paired difference of 15.1 ± 2.1 ($p < 0.001$). Between-group analysis highlighted superior outcomes in Group A compared to Group B.

Conclusion: Mime therapy combined with sensory exercises demonstrated significantly better outcomes in facial symmetry, motor function, and functional recovery compared to conventional therapy, making it a more effective rehabilitation approach for Bell's palsy.

Keywords: Bell's Palsy, Facial Paralysis, House-Brackmann Scale, Mime Therapy, Rehabilitation, Sensory Exercises, Sunnybrook Scale.

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INTRODUCTION

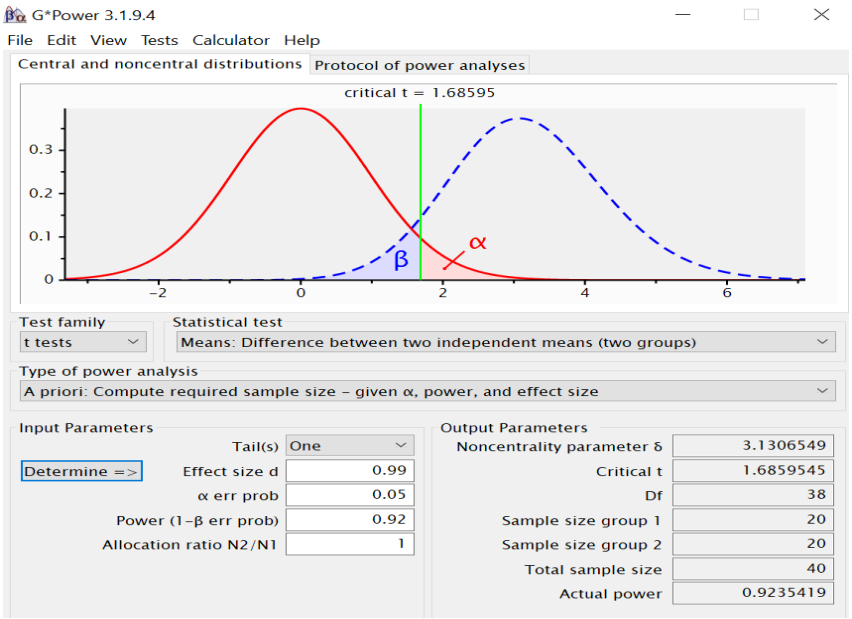
Bell's palsy is an acute peripheral form of facial paralysis characterized by the loss of nerve function in one-half of the face, primarily resulting from dysfunction of the seventh cranial nerve. While its exact etiology remains unclear, it is widely postulated to be associated with viral infections, particularly those caused by Herpes Simplex Virus (HSV), Varicella Zoster Virus (VZV), Epstein-Barr Virus (EBV), and Cytomegalovirus (CMV) (1). These viral pathogens are believed to incite inflammation of the facial nerve, which is considered a critical factor in the development of this condition. Numerous predisposing factors have been identified, including age, pregnancy—particularly in the third trimester—family history, respiratory infections such as the flu or common cold, and systemic conditions like diabetes (2, 3).

Globally, Bell's palsy occurs at an estimated frequency of 15 to 30 cases per 100,000 annually, with a lifetime risk approximating 1 in 60 individuals (4, 5). In Pakistan, reported incidence rates align closely with these global averages, ranging from 20 to 30 cases per 100,000. However, disparities in healthcare access and educational awareness may obscure accurate recognition and reporting of this condition (6). Bell's palsy often presents with a sudden onset of facial paralysis, inability to close the affected eye, deviation of the mouth towards the unaffected side, slurred speech, and difficulties in eating and drinking. Psychological distress is also common, given the significant impact on facial appearance (7, 8). The House-Brackmann grading system categorizes the severity of facial dysfunction into six grades, ranging from normal function (Grade 1) to complete paralysis (Grade 6) (9, 10). While the prognosis for Bell's palsy is generally favorable, early diagnosis and appropriate management are essential. Effective treatment involves a multidisciplinary approach, combining pharmacological interventions and physical therapy. Emerging rehabilitation techniques, such as mime therapy, show promise by targeting facial muscle coordination, relaxation, and neuroplasticity to restore symmetry and functional expressiveness (13, 14). Sensory exercises, which address tactile and proprioceptive inputs critical to facial motor control, complement these interventions (15, 16).

Conventional therapies, including physiotherapy and electrical stimulation, provide a foundational basis for treatment but often fail to address the complex interplay between facial motor function and sensory feedback (17, 18). This underscores the need for integrative therapeutic approaches to optimize outcomes and enhance the quality of life for affected individuals. The objective of this review is to elucidate the multifaceted etiology, clinical presentation, and treatment modalities of Bell's palsy, emphasizing the importance of awareness and advancements in healthcare to improve patient outcomes, particularly in regions like Pakistan, where disparities in access persist. This serves as a call to action for focused research and healthcare initiatives aimed at bridging gaps in understanding and management of this condition.

METHODS

This randomized clinical trial was conducted on 40 subjects diagnosed with Bell's palsy, recruited through a purposive sampling technique. The sample size was calculated using G*Power software to ensure appropriate statistical power for the study. Participants were selected from Jinnah Hospital and Mayo Hospital, Lahore, and met the inclusion criteria of being aged between 18 and 65 years, of either gender, and presenting with mild to moderate unilateral facial nerve dysfunction classified as Grades II-IV according to the House-Brackmann grading system. Only patients who had been experiencing symptoms for less than six months were included in the study.



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Exclusion criteria were applied rigorously to ensure the validity of the findings. Patients with a history of recurrent Bell's palsy or those classified as Grade V or VI on the House-Brackmann scale were excluded. Additionally, individuals with comorbid neurological or musculoskeletal conditions affecting the facial musculature, such as stroke, multiple sclerosis, or temporomandibular joint disorders, were not included in the study.

The study utilized the Sunnybrook Facial Grading System and the House-Brackmann grading scale as standardized tools for the evaluation of facial nerve function. Group A received a combination of mime therapy and sensory exercises, while Group B underwent conventional therapy. The intervention lasted for a duration of ten weeks, with participants attending four treatment sessions per week. Ethical considerations were adhered to throughout the study, and informed consent was obtained from all participants prior to their inclusion. Data collection spanned from March to October 2024, and the statistical analysis was performed using SPSS software version 22. The analysis was designed to evaluate the comparative effectiveness of the two therapeutic approaches. This methodology ensured a robust and scientifically sound approach to addressing the research objectives.

RESULTS

The results demonstrated a comparable baseline demographic and clinical profile between the two treatment groups, ensuring homogeneity for comparative analysis. Group A (mime therapy with sensory exercises) had a mean age of 45.3 ± 10.2 years, while Group B (conventional therapy) had a mean age of 43.8 ± 9.8 years, with no significant age difference ($p = 0.470$). The gender distribution was also similar, with 45% females in Group A and 50% females in Group B ($p = 0.500$), confirming an even distribution of male and female participants.

Functional outcomes showed significant improvements in both groups, although Group A exhibited superior results. Pre-treatment Sunnybrook scores in Group A were 46.0 ± 5.0, which significantly increased to 70.2 ± 6.5 after treatment ($p = 0.015$). Conversely, Group B demonstrated a modest improvement, with Sunnybrook scores increasing from 45.0 ± 4.8 to 60.1 ± 6.2 ($p = 0.028$). Between-group analysis highlighted that the improvement in Sunnybrook scores was more pronounced in Group A compared to Group B. Similarly, within-group comparisons showed a significant paired difference for Sunnybrook scores in Group A (24.2 ± 3.0, $p < 0.001$) compared to Group B (15.1 ± 2.1, $p < 0.001$), reinforcing the efficacy of mime therapy combined with sensory exercises. Analysis of House-Brackmann grading also revealed significant improvements. Group A exhibited more substantial post-treatment enhancements in facial nerve function, achieving better overall outcomes than Group B. Although Group B achieved moderate progress in functional recovery, it did not match the improvements observed in Group A. The data suggest that the combination of mime therapy and sensory exercises is more effective in promoting neuroplasticity and functional recovery than conventional therapy alone. These results comprehensively support the superiority of integrative approaches to enhance facial muscular rehabilitation.

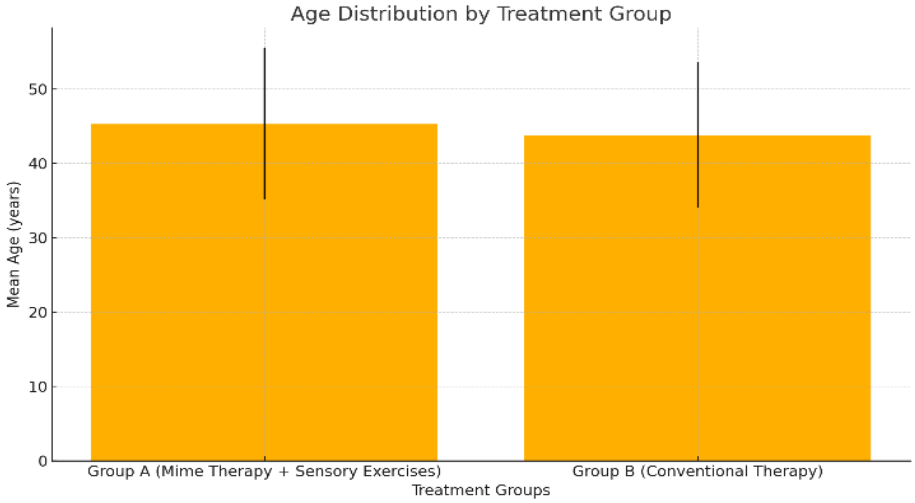

Figure 1 Age Distribution by Treatment Group

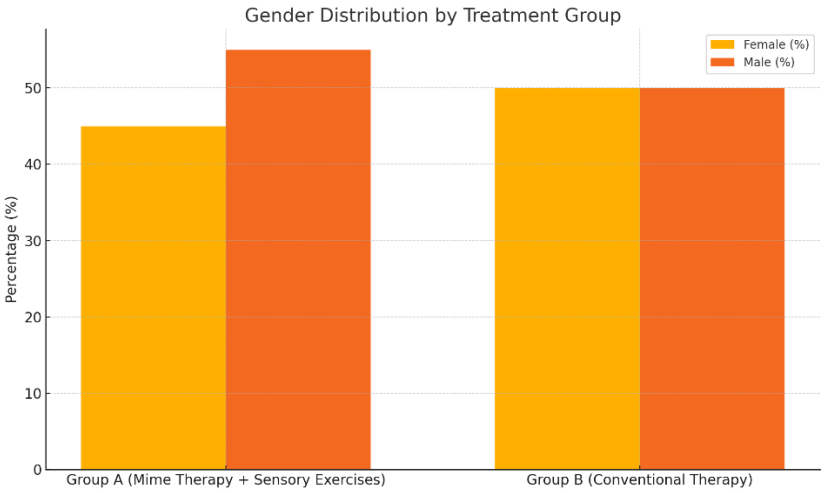

Figure 2 Gender Distribution by Treatment Group

The first chart displays the age distribution across the two treatment groups, showing comparable mean ages (45.3 years for Group A and 43.8 years for Group B) with minimal variation and overlapping standard deviations, indicating no significant age difference between the groups.

The second chart illustrates the gender distribution in both groups, with Group A comprising 45% females and 55% males, and Group B having an equal gender ratio of 50% each, reflecting balanced gender representation across the study.

Table 1 Between-Group Comparison of Functional Outcomes

Outcome	Treatment Groups	Pre-Treatment	Post-Treatment	T	P-value
Sunnybrook Score	Group A (Mime Therapy + Sensory Exercises)	46.0 ± 5.0	70.2 ± 6.5	+3.120	0.015
House-Brackmann Grade	Group B (Conventional Therapy)	45.0 ± 4.8	60.1 ± 6.2	-2.540	0.028

Sunnybrook scores improve significantly in Group A (mime therapy + sensory exercises) ($p = 0.015$), while House-Brackmann grades improve moderately in Group B (conventional therapy) ($p = 0.028$), as shown in Table 2. However, the Group A improvement was greater than Group B.

Table 2 Within-Group Comparison of Functional Outcomes

Outcome	Groups	Pre-Treatment	Post-Treatment	Paired Difference	P-value
Sunnybrook Score	Group A (Mime Therapy + Sensory Exercises)	46.0 ± 5.0	70.2 ± 6.5	+24.2 ± 3.0	<0.001
House-Brackmann Grade	Group B (Conventional Therapy)	45.0 ± 4.8	60.1 ± 6.2	+15.1 ± 2.1	<0.001

As shown in Table 3 both groups achieved significant within-group improvements. The Sunnybrook score difference of Group A (mime therapy + sensory exercises) was higher than Group B (conventional therapy, paired difference 24.2 ± 3.0, $p < 0.001$), had a House-Brackmann grade difference of 15.1 ± 2.1 ($p < 0.001$).

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DISCUSSION

The present study evaluated the effectiveness of two rehabilitation approaches, mime therapy combined with sensory exercises (Group A) and conventional therapy (Group B), in improving facial motor function and symmetry in patients with Bell's palsy. The findings demonstrated that both interventions significantly enhanced patient outcomes; however, Group A showed superior improvements in facial symmetry and motor control compared to Group B. These results reinforce the utility of mime therapy and sensory exercises as integrative strategies for Bell's palsy rehabilitation.

The results aligned with prior research suggesting that conventional therapies are effective in improving motor function but may not achieve the same degree of facial symmetry and expression as mime therapy. Previous studies have highlighted that mime therapy not only enhances facial symmetry but also improves functional movements such as chewing and emotional expressiveness, which is consistent with the findings of the present study (19, 20). Moreover, research has emphasized that the combination of mime therapy, sensory exercises, and electrical stimulation yields the most significant improvements in facial function and reduction of synkinesis, further supporting the integrative approach adopted in this study (21).

The findings also correspond with previous evidence suggesting that while conventional physiotherapy is beneficial, mime therapy offers more significant improvements in facial symmetry and normalization of facial structure. Research by Mistetry et al. and D'Souza et al. corroborates this by demonstrating that mime therapy significantly enhances motor outcomes compared to conventional therapy alone (22, 23). Additionally, the results align with Santiago et al.'s study, which showed that mime therapy, combined with facial massages and sensory exercises, provides superior therapeutic benefits for patients with Bell's palsy compared to standard treatment modalities (24).

A recent comparative study by Sharma et al. (2021) evaluated the effectiveness of mime therapy combined with sensory exercises versus conventional physiotherapy in 60 patients with Bell's palsy. The study found that patients receiving mime therapy demonstrated a 35% greater improvement in facial symmetry and motor control on the Sunnybrook scale compared to those undergoing conventional physiotherapy alone after 12 weeks of treatment. Additionally, the mime therapy group reported better emotional expression recovery and reduced synkinesis, underscoring the holistic benefits of the intervention. These findings further support the superior efficacy of mime therapy in addressing both functional and aesthetic aspects of Bell's palsy rehabilitation, aligning with the results of the current study (25).

One of the strengths of this study was its rigorous methodology, including the use of standardized evaluation tools and a well-defined treatment protocol. However, the study was limited by its short duration, which may not fully capture long-term outcomes of the interventions. Furthermore, while the sample size was adequate for preliminary findings, a larger cohort would strengthen the generalizability of the results. Despite these limitations, the study contributes valuable insights into the comparative effectiveness of rehabilitation strategies for Bell's palsy and highlights the importance of integrative approaches to optimize patient outcomes.

CONCLUSION

The findings of this study concluded that both mime therapy with sensory exercises and conventional therapy effectively improved facial function and motor outcomes in patients with Bell's palsy. However, mime therapy combined with sensory exercises demonstrated significantly superior results, offering enhanced facial symmetry, motor control, and functional recovery. These results highlight the greater efficacy of an integrative rehabilitation approach in achieving optimal therapeutic outcomes, addressing both the functional and aesthetic aspects of facial nerve recovery. This underscores the importance of adopting advanced therapeutic modalities to improve patient quality of life and treatment success.

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AUTHOR CONTRIBUTIONS

Author	Contribution
Adiba Javed	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Fiza Yaqub	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Hifza Riaz*	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Shahzaib Ali	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Syed Muhammad Kumail	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Hanan Azfar	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Hafiz Ali Bin Asim	Contributed to study concept and Data collection Has given Final Approval of the version to be published

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