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*Original Article*

# Frequency and Clinical Outcomes of Facial Nerve Palsy at District Level Teaching Hospital, Pakistan

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## ABSTRACT

Background: Facial nerve palsy, characterized by the dysfunction of the seventh cranial nerve, is a common neurological disorder that significantly impacts patients' quality of life. It manifests as unilateral facial weakness or paralysis, with Bell's palsy being the most prevalent cause. This condition requires thorough clinical evaluation and appropriate management to ensure optimal recovery outcomes.

Objective: The objective of this study was to determine the frequency and clinical outcomes of facial nerve palsy in patients presenting to a district-level teaching hospital in Lakki Marwat, Pakistan.

Methods: A cross-sectional study was conducted from May 2023 to October 2023 at the Physiotherapy Department of District Headquarter Hospital, Lakki Marwat. Patients with a confirmed diagnosis of facial nerve palsy by a neurophysician were included, while those with congenital facial nerve palsy or upper motor neuron lesions were excluded. Ethical approval was obtained, and written informed consent was collected from all participants. Clinical assessments were performed using the House-Brackmann scale to evaluate the severity of facial nerve dysfunction. Data were collected through a semi-structured questionnaire and analyzed using SPSS version 25. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to present the data.

Results: Out of 102 patients, 59 (57.9%) were male, and 43 (42.1%) were female, with a mean age of 38.2 ± 10.36 years. The majority of patients (41.1%) were in the 31-40 years age group. Right-side facial palsy was more prevalent, affecting 64 (62.7%) patients. The House-Brackmann grading revealed that 49 (48.2%) patients were in Grade IV, 24 (23.5%) in Grade V, 15 (14.7%) in Grade III, 8 (7.8%) in Grade VI, and 6 (5.8%) in Grade II. Bell's palsy was the most common cause, accounting for 52 (51%) cases, followed by external trauma in 22 (21.6%) patients, infections in 18 (17.6%) patients, and tumors in 10 (9.8%) patients. Treatment outcomes showed complete recovery in 65 (63.7%) patients, incomplete recovery in 28 (27.5%), and no recovery in 9 (8.8%).

Conclusion: Facial nerve palsy was more common in male patients, with the right side of the face being predominantly affected. Bell's palsy was identified as the leading cause. The study highlights the importance of early diagnosis and intervention, particularly physiotherapy, in managing facial nerve palsy. Further research is recommended to explore long-term outcomes and optimize treatment strategies.

Keywords: Facial nerve palsy, Bell's palsy, facial paralysis, House-Brackmann scale, physiotherapy.

## INTRODUCTION

Facial nerve palsy, the dysfunction of the seventh cranial nerve, presents a significant clinical challenge due to its intricate anatomy and diverse etiologies. This mixed nerve, responsible for both sensory and motor innervation, exits the skull through the stylomastoid foramen in the temporal bone and traverses the parotid gland to supply motor fibers to the facial muscles, facilitating facial expressions (1). It also provides sensory input to the anterior two-thirds of the tongue and parasympathetic innervation to the sublingual, lacrimal, submandibular, and pharyngeal glands, excluding the parotid gland (2). Given its extensive course from the brain

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to the peripheral regions, the facial nerve is susceptible to various pathologies, leading to paralysis or weakness of facial muscles. Differentiating between central causes, such as stroke, multiple sclerosis, or brain tumors, and peripheral causes, like ear infections, Bell's palsy, or nerve tumors, is crucial in clinical evaluation. Central facial palsy often spares the forehead muscles, allowing the patient to raise their eyebrows, whereas peripheral palsy typically involves the entire side of the face (3).

Facial nerve palsy is considered the most common cranial nerve disorder, significantly impacting patients' quality of life. Bell's palsy, a sudden idiopathic onset of unilateral facial weakness, was first described by Scottish neurologist Charles Bell in the 1820s. It accounts for 65-75% of facial nerve palsy cases, with an incidence rate of 20-30 per 1,000 persons annually (4). Functional impairments in Bell's palsy include facial asymmetry, loss of forehead wrinkling, inability to close the eyes, difficulty speaking, mouth deviation, drooling, reduced chewing ability, and impaired smiling (5). Traumatic facial nerve palsy, attributed to facial wounds or temporal bone fractures, constitutes 10-20% of cases. Postoperative palsy often results from iatrogenic lesions during surgeries involving the ear, parotid gland, or removal of vestibular schwannoma (6). These injuries lead to functional, aesthetic, and emotional issues for patients (7). Congenital conditions, like Moebius syndrome, and acquired diseases, such as Ramsay Hunt syndrome or acoustic neuroma, also cause facial muscle weakness, resulting in visual disturbances, speech and eating difficulties, and social isolation due to altered facial appearance and function (8).

Bilateral facial nerve palsy is rare, occurring in 0.3 to 2% of all facial palsy cases, often linked to systemic diseases like Lyme disease, diabetes, sarcoidosis, and Guillain-Barré syndrome. Neurological causes, including multiple sclerosis, Parkinson's disease, and bulbar palsy, can also manifest as bilateral palsy (9). Studies indicate a higher prevalence of facial nerve palsy among individuals with compromised immune systems, such as pregnant women, and those with hypertension, obesity, diabetes, or respiratory ailments (10). The most effective treatment for Bell's palsy is oral corticosteroids like prednisolone, administered within 72 hours of onset to reduce inflammation at the nerve site. If symptoms worsen after four weeks, further investigations are necessary to identify the underlying cause (11).

This study aims to determine the frequency and clinical outcomes of facial nerve palsy patients at a district-level teaching hospital in Lakki Marwat, Pakistan. Understanding the demographic and clinical characteristics of these patients will help in developing targeted interventions and improving patient care.

## MATERIAL AND METHODS

The study was a prospective observational analysis conducted from May 2023 to October 2023 at the Physiotherapy Department of District Headquarter Hospital, Lakki Marwat. Ethical approval for the study was obtained from Ibadat International University Islamabad (reference number IRB-IIUI-FAHS/DPT/1022-1202, dated April 11, 2023), and permission for data collection was secured from the Medical Superintendent of the hospital. The sample size was calculated using EpiTool, based on an anticipated frequency of 7.1%, with a 95% confidence interval and a 5% margin of error.

Inclusion criteria encompassed all patients who presented to the physiotherapy department with a confirmed diagnosis of facial nerve palsy by a neurophysician, irrespective of age and gender. Exclusion criteria included patients with congenital facial nerve palsy or those with facial nerve palsy resulting from upper motor neuron lesions. Informed consent was obtained from all participants who met the study criteria, following the ethical principles outlined in the Declaration of Helsinki.

Clinical assessment of facial nerve paralysis was conducted upon presentation to the department. The House-Brackmann scale, a reliable and widely utilized tool, was employed to evaluate the severity of facial nerve dysfunction. This scale, comprising six grades, characterizes the degree of facial nerve palsy from normal function (Grade I) to complete paralysis (Grade VI) (12).

Data were collected using a semi-structured questionnaire that gathered demographic information, including age and gender, the affected side of the face, and detailed medical histories such as family history of facial palsy, malignancies, previous occurrences of facial palsy, surgeries, trauma, and infections. This comprehensive questionnaire facilitated a thorough understanding of each patient's condition.

Data analysis was performed using SPSS version 25. Descriptive statistics were employed to analyze the data, with frequencies, percentages, means, and standard deviations calculated for qualitative and quantitative variables. These variables included age, gender, the affected side of the face, severity of facial nerve palsy, underlying causes, and treatment outcomes.

This methodological approach ensured a rigorous and systematic investigation into the frequency and clinical outcomes of facial nerve palsy in patients presenting at a district-level teaching hospital in Pakistan, providing valuable insights into the demographic and clinical characteristics of this condition.

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## RESULTS

A total of 102 patients diagnosed with facial nerve palsy were included in the study. Among the study participants, 59 (57.9%) were male and 43 (42.1%) were female. The mean age of patients was 38.2 ± 10.36 years. The majority of patients (41.1%) were in the 31-40 years age group. The right side of the face was affected in 64 (62.7%) patients, while the left side was affected in 38 (37.3%) patients.

Table 1: Demographic and Clinical Characteristics of Facial Nerve Palsy Patients

| Variable | Frequency (n=102) | Percentage (%) |
|---|---|---|
| **Age (years)** | | |
| 10-20 | 9 | 8.8 |
| 21-30 | 15 | 15.0 |
| 31-40 | 42 | 41.1 |
| 41-50 | 21 | 20.5 |
| 51-60 | 11 | 10.7 |
| 60 and above | 4 | 3.9 |
| **Gender** | | |
| Male | 59 | 57.9 |
| Female | 43 | 42.1 |
| **Side Affected** | | |
| Right | 64 | 62.7 |
| Left | 38 | 37.3 |
| **Severity of Paralysis** | | |
| Grade II | 6 | 5.8 |
| Grade III | 15 | 14.7 |
| Grade IV | 49 | 48.2 |
| Grade V | 24 | 23.5 |
| Grade VI | 8 | 7.8 |

The severity of facial paralysis, assessed using the House-Brackmann grading system, revealed that the majority of patients (48.2%) were classified as Grade IV. This was followed by 24 (23.5%) patients in Grade V, 15 (14.7%) in Grade III, 8 (7.8%) in Grade VI, and 6 (5.8%) in Grade II.

The most common cause of facial nerve palsy was Bell's palsy, accounting for 52 (51%) cases. External trauma was the second most common cause, affecting 22 (21.6%) patients, followed by infections in 18 (17.6%) patients, and tumors in 10 (9.8%) patients.

Table 2: Causes of Facial Nerve Palsy

| Cause | Frequency | Percentage (%) |
|---|---|---|
| External trauma | 22 | 21.6 |
| Bell's palsy | 52 | 51.0 |
| Infection | 18 | 17.6 |
| Tumor | 10 | 9.8 |

Outcomes of treatment showed that 65 (63.7%) patients achieved complete recovery, 28 (27.5%) had incomplete recovery, and 9 (8.8%) showed no recovery.

Table 3: Recovery Rate of Facial Nerve Palsy

| Outcome | Frequency | Percentage (%) |
|---|---|---|
| Complete recovery | 65 | 63.7 |
| Incomplete recovery | 28 | 27.5 |
| No recovery | 9 | 8.8 |

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The results indicate that facial nerve palsy was more prevalent in male patients, with the right side of the face being more commonly affected. The age group most affected was 31-40 years. Bell's palsy was identified as the leading cause of facial nerve palsy, followed by external trauma. The majority of patients showed significant improvement with conservative treatment and physiotherapy.

## DISCUSSION

The current study evaluated 102 patients diagnosed with facial nerve palsy at a district-level teaching hospital in Lakki Marwat, Pakistan, revealing several significant findings. The prevalence of facial nerve palsy was higher in males, aligning with previous research that reported a similar gender distribution. For instance, Alshami et al. found Bell's palsy to be the most common cause of facial nerve palsy in a study involving 619 patients, corroborating our findings where Bell's palsy accounted for 51% of cases (13). Similarly, the age group most affected in our study was 31-40 years, consistent with Marc H. Hohman et al., who reported a mean age of 44.5 ± 18.6 years in their cohort (14).

The right side of the face was more commonly affected, which is consistent with the findings of previous studies. Chweya et al. noted a high rate of right-side facial paralysis recurrences, reflecting our observation that 62.7% of patients had right-sided facial palsy (15). The majority of patients presented with moderate to severe dysfunction, as indicated by the House-Brackmann grades IV and V, highlighting the need for timely and effective therapeutic interventions. This grading distribution was in line with findings from other studies, such as that by Young-Soo Chang et al., who emphasized the prevalence of moderate to severe facial nerve palsy in their national survey in Korea (18).

The study identified Bell's palsy as the leading cause of facial nerve palsy, followed by external trauma, infections, and tumors. This etiological distribution aligns with global patterns, as noted in various studies. For example, Psillas et al. reported idiopathic Bell's palsy as the most common cause in their pediatric cohort, further supporting the prevalence of Bell's palsy across different age groups and settings (16). In contrast, Papan et al. found a higher incidence of infectious causes in children, indicating a potential variation in etiological factors based on demographic differences (17).

Our findings demonstrated a significant recovery rate with conservative treatment and physiotherapy, with 63.7% of patients achieving complete recovery. This outcome is consistent with literature suggesting that physiotherapy plays a crucial role in improving facial muscle function and hastening recovery. Studies by Vaughan et al. and Gatidou et al. have emphasized the effectiveness of physical therapy techniques, including proprioceptive neuromuscular facilitation and nerve stimulation, in enhancing recovery outcomes for patients with Bell's palsy (20, 21).

Despite these positive findings, the study had several limitations. The sample size was relatively small, and the study was conducted in a single hospital, potentially limiting the generalizability of the results. Additionally, the observational design did not allow for control over confounding variables, which might have influenced the outcomes. Future research with larger, multi-center studies and randomized controlled trials is recommended to validate these findings and explore the long-term effects of different treatment modalities.

The study's strengths include a comprehensive assessment using the House-Brackmann scale and a thorough data collection process, ensuring detailed patient evaluation. Moreover, the inclusion of a broad age range and both genders provided a comprehensive overview of facial nerve palsy in the studied population.

## CONCLUSION

In conclusion, the study highlighted the higher prevalence of facial nerve palsy in males, with Bell's palsy being the most common cause. The right side of the face was more frequently affected, and the majority of patients achieved significant recovery with conservative treatment and physiotherapy. These findings underscore the importance of early diagnosis and intervention, particularly physiotherapy, in managing facial nerve palsy. Further research is needed to explore the underlying mechanisms and optimize treatment strategies for better patient outcomes.

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