

# Clinical Symptoms, Diagnose, Dental Implication and Management of Bell's Palsy: Review

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**Abstract:** Bell's palsy is an acute peripheral facial nerve paralysis that causes sudden unilateral facial weakness and remains a common neurological condition. This study aimed to review recent literature related to the clinical features, diagnosis, etiology, classification, and management of Bell's palsy, especially its implications in dental practice, using a literature review approach from international journals published within the last five years. The results showed that the diagnosis of Bell's palsy is primarily clinical, supported by physical examination and selective investigations such as EMG and MRI. Corticosteroids remain the main treatment, while antivirals and physiotherapy are beneficial in selected cases. Most patients experience significant recovery within several months with appropriate management. In conclusion, early diagnosis and combination therapy, supported by proper rehabilitation and dental care, play an important role in improving recovery and preventing complications in patients with Bell's palsy.

**Keywords:** Bell's palsy; Combination therapy; Corticosteroids; Dentistry; Facial paralysis; HSV-1.

## Introduction

Bell's palsy (BP) is an acute unilateral paralysis of the facial nerve (cranial nerve VII) that develops within less than 72 hours without an identifiable cause. It has been recognized since ancient times and was later named after Sir Charles Bell. Common signs and symptoms include drooping of one side of the face, inability to close the eye, dry eye or excessive tearing, drooping of the mouth, postauricular pain, loss of taste in the anterior two-thirds of the tongue, and Bell's phenomenon (upward rolling of the eye when attempting to close the eyelid) (Danesh & Ouanounou, 2022).

Bell's palsy is an idiopathic lower motor neuron paralysis of the facial nerve that causes sudden unilateral facial weakness and visible asymmetry. Its annual incidence ranges from 11–50 cases per 100,000 population worldwide. In Saudi Arabia, national prevalence is unknown, but regional studies report varying incidence rates, ranging from 5.3 to 30.4 cases per 100,000 per year. Although the exact cause is unclear, possible mechanisms include viral reactivation (e.g., herpes simplex virus), and several risk factors have been identified, such as age, pregnancy, obesity,

hypertension, diabetes, respiratory infections, vaccination, and genetic susceptibility linked to consanguineous marriages. The increasing prevalence of metabolic conditions in Saudi Arabia may contribute to higher risk (Alanazi et al., 2022).

Clinically, patients may present with partial or complete unilateral facial weakness, sometimes accompanied by numbness, mild pain, hyperacusis, and altered taste. Diagnosis is primarily clinical and made by exclusion, with neuroanatomical understanding helping differentiate central from peripheral lesions. Corticosteroids remain the mainstay of treatment, with antivirals sometimes added. Early improvement within three weeks is associated with better prognosis, while 4–14% of patients may experience recurrence, often on the same side (Singh & Deshmukh, 2022).

Prompt and appropriate treatment is essential to prevent long-term complications and to preserve patients' emotional and social well-being. Bell's palsy typically presents with unilateral facial weakness and may also include taste disturbances, reduced tearing, or hyperacusis, often causing concern about serious central nervous system conditions. It is primarily associated with reactivation of herpes simplex virus in the

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geniculate ganglion and is diagnosed only after excluding other potential causes (Kim & Kwak, 2025).

While most patients recover without treatment, nearly one-third experience incomplete recovery, resulting in long-term facial dysfunction, chronic pain, and significant psychological distress. Current treatment options include corticosteroids (effective if given within 72 hours), possible antiviral therapy, physical therapy, and surgery, though evidence for surgical benefit is limited. Facial exercise therapy shows some benefit, particularly in moderate or chronic cases, but further high-quality research is needed to strengthen the evidence base and guide future rehabilitation strategies, including tele-rehabilitation approaches (Khan et al., 2022).

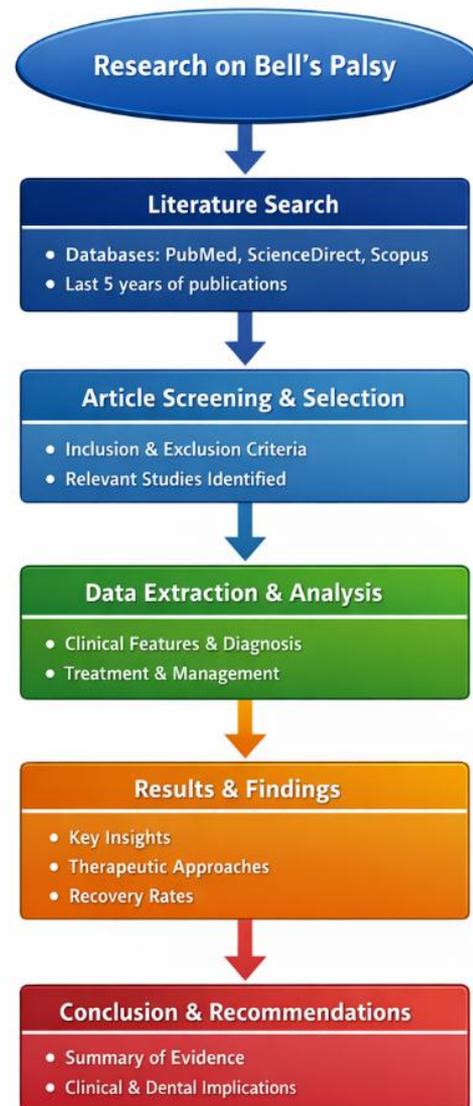
**Method**

Bell's palsy is evaluated through medical history, physical examination, and, if necessary, additional tests. Patients usually complain of sudden facial weakness on one side accompanied by difficulty closing the eyes, a crooked mouth, uncontrolled drooling, and taste disturbance or hypersensitivity to sound. The physical examination focuses on facial nerve function by evaluating facial symmetry at rest and during movements, such as raising the eyebrows, closing the eyes tightly, smiling, showing the teeth, and puffing out the cheeks. On the affected side, weakness is apparent across the entire half of the face, including an immobile forehead, an eyelid that cannot close completely (lagophthalmos), and a mouth that is pulled toward the healthy side. Reduced corneal reflexes and taste disturbances in the anterior two-thirds of the tongue may also be found.

The main differential diagnosis is stroke, which can be distinguished because in stroke the patient's forehead can still move. Supporting tests such as electromyography (EMG) are used to assess the degree of nerve damage, while CT scans or MRIs are performed if there is suspicion of a central cause such as a tumor or stroke. Thus, the diagnosis of Bell's palsy is primarily clinical, while additional tests serve to rule out other causes.

Methods used in this literature review is: Literature Study/Literature Review: Author collect and analyze

various journal scientific latest (published in 5 years last) relevant with diagnosis, symptoms Clinical features, etiology, classification, and therapy of Bell's Palsy. Source Scientific References: Literature used originate from journals international like *Cureus*, *American Family Physician*, *Journal of Audiology and Otology*, and *Journal of the Canadian Dental Association*. Approach Thematic: The material is arranged based on topics main related to Bell's Palsy such as: etiopathology, differential diagnosis, management pharmacological and non-pharmacological, as well as implications medical tooth.



**Figure 1.** Research Flow Chart

**Result and Discussion**

**Table 1.** Summary of Reviewed Studies

Reference	Focus	Key Findings
(Choi, 2023)	Compiling results study previous and clinical trials (e.g. Sullivan et al. 2007, Engström et al.	Consistent results with international guidelines → early steroids is gold standard, antivirus only additional, whereas focus big on

Reference	Focus	Key Findings
	2008, Hato et al. 2007), as well as studies imaging and examination supporting (ENoG, EMG, MRI) for support recommendation.	protection too eyes & rehabilitation. This article emphasizes that although part big case recover, monitoring term long important for prevent sequelae.
(Danesh & Ouanounou, 2022)	Selection studies relevant from PubMed and other databases, including randomized trials, observational studies, and reports case study etiology (HSV, ischemia, anatomy), therapy pharmacological (steroids, antivirals), and adjuvants (acupuncture, physiotherapy, oxygen) hyperbaric).	Consistent results with international guidelines: steroids as therapy main, antivirus only beneficial when combined physiotherapy for case weight, and protection eye as step mandatory. Its limitations is heterogeneity referenced studies, so that part recommendations (especially antivirals & adjuvants) are still Not yet Can considered as standard strong.
(Spalsy & Review, 2025)	" Randomized controlled trials (RCTs) involving adult Bell's Palsy patients receiving Mime Therapy were included. Outcomes included assessed facial motor function, facial symmetry, synkinesis, and quality of life. Methodological quality was evaluated using the PEDro scale, and meta-analyses were conducted where appropriate.	Ten RCTs met the inclusion criteria, with nine included in the meta-analysis. Strong Evidence (Level 1a) supported the effectiveness of Mime Therapy in improving Resting Symmetry (RS), Facial Disability Index (FDI) Physical and Social Function, and overall Sunnybrook Facial Grading System (SFGS) Composite scores. Moderate evidence (Level 1b) was found for improvements in voluntary movement, synkinesis, and House Brackmann scores. Meta-analyses showed statistically significant improvements in SFGS voluntary movement (SMD = 0.57; 95% CI: 0.16 to 0.98; p = 0.006) and trends favoring Mime Therapy in other domains.
(Balchander et al., 2024)	The COVID-19 research network was used to identify individuals with facial paralysis who visited 70 hospitals in the United States. The frequency of Bell's palsy was recorded in the 8-week period following a COVID-19 test or vaccine administration in identified patients.	The incidence of facial paralysis diagnosis (0.99%) increased compared to normal levels within two months after COVID-19 infection. When compared to the uninfected control group, patients infected with COVID-19 had a significantly higher likelihood of developing Bell's palsy (risk ratio [RR] = 1.77, p
(Dalrymple et al., 2023)	Combining data from RCTs, meta- analyses, and guidelines clinical for produce recommendations for diagnosis, therapy, rehabilitation, and care eye.	The results show consistency with global guidelines: steroids as primary therapy, selective antiviral, physiotherapy in cases heavy, and some big patients recover spontaneously. Added value article This is <i>practical algorithm</i> (figure 3 in articles) that can directly be used in practice doctor general. However, because based on rapid review, detailed methodology data analysis (eg. heterogeneity between RCTs) not deepened.
(Gardner et al., 2025)	filtering article using PRISMA diagrams; only enter studies with criteria inclusion clear (Bell's palsy population, intervention or diagnosis, outcome clinical). Quality proof assessed from design studies (RCT, cohort, case series).	Results as per purpose, to provide a complete description from diagnosis to therapy. Recommendations that emerge in line with guidelines for the latest: steroids as therapy main, antivirus only when considered selective, physiotherapy when case severe/persistent, and surgery is very limited. However, the limitations still there is heterogeneity peer-reviewed studies
(Singh & Deshmukh, 2022)	Narrative review. Enter article clinical, research basis, and reports relevant cases; no There is data search no published. Synthesis information from literature for summarize anatomy, causes, diagnosis, and therapy.	Results as per purpose, present guide practical based proof clinical that has been established (for example the role of steroids) and also discusses areas that are still controversial (antiviral, therapy) adjuvant). However, because of the design narrative, level strength recommendation depending on the quality the source cited, not results analysis primary statistics.
(Cavalcante et al., 2022))	a combined design consisting of two case reports and a rapid systematic review. Literature searches were conducted in PubMed, Embase, and the Cochrane Library using keywords related to COVID-19 and facial paralysis	A total of 43 studies including approximately 127-128 patients with peripheral facial paralysis (PFP) after COVID-19 were analyzed. Most patients were aged 18-59 years, with a median onset of facial paralysis three days after COVID-19 diagnosis.
(Chu et al., 2022)	A literature review revealed 12 additional cases where chiropractic spinal manipulation combined with multimodal therapies was reported to improve Bell's palsy. When the	This case demonstrates improvement in Bell's palsy and associated trigeminal neuropathy through multimodal chiropractic care, including spinal manipulation. Evidence from similar reports indicates that the trigeminal pathway may contribute to the favorable treatment responses observed in

Reference	Focus	Key Findings
	present case is included, 85% of these patients also experienced facial or neck pain	Bell's palsy with concurrent facial or neck pain. Further studies are needed using research designs that consider the natural course of Bell's palsy
(Wang, 2024)	It described a patient diagnosed with peripheral facial palsy associated with COVID-19. Clinical assessments included neurological examination, laboratory confirmation of SARS-CoV-2 infection, and imaging studies to exclude other neurological causes.	The patient developed peripheral facial palsy following SARS-CoV-2 infection and showed clinical improvement after corticosteroid treatment. Most cases identified in the literature similarly reported favorable outcomes with early corticosteroid therapy spontaneously
(Serifler et al., 2024)	This retrospective clinical study included 48 patients diagnosed with Bell's palsy between January 2018 and June 2020 and 45 healthy controls. Patients with systemic inflammatory, hematologic, cardiovascular, or chronic diseases were excluded.	The MHR was significantly higher in patients with Bell's palsy compared to the control group ( $p=0.027$ ), while no significant differences were found for MLR, NLR, or PLR. A moderate positive correlation was observed between MHR and House-Brackmann stage ( $r=0.589$ , $p<0.01$ )
(Albakri et al., 2023)	Comprehensive literature search was performed in PubMed, SCOPUS, EBSCO, and Web of Science from database inception until October 2022	A total of 35 records were included, comprising observational studies and 31 case reports/series describing 105 patients with Bell's palsy after COVID-19 vaccination. The mean age was 49.7 years, and most patients were male (57.1%)
(Bertin et al., 2023)	a narrative review aiming to evaluate the possible association between vaccination and peripheral facial palsy (PFP), with a particular focus on COVID-19 vaccines. A systematic search of PubMed/Medline was performed from database inception until February 25, 2022, using two strategies: one broad search excluding COVID-19 vaccines and another specifically targeting COVID-19 vaccines	Out of 347 retrieved articles, 32 comparative epidemiological studies, 1 meta-analysis, and 4 case reports met the inclusion criteria, including 13 studies related to COVID-19 vaccines
(Khan et al., 2022)	Evidence suggested that facial exercise therapy and neuromuscular retraining may improve facial function, particularly in patients with moderate to severe or chronic paralysis. Electrical stimulation showed inconsistent results and limited supportive evidence	Evidence suggested that facial exercise therapy and neuromuscular retraining may improve facial function, particularly in patients with moderate to severe or chronic paralysis. Electrical stimulation showed inconsistent results and limited supportive evidence
(Alanazi et al., 2022)	Medical records from Qurayyat General Hospital and King Fahad Hospital between 2015 and 2020 were reviewed, identifying 279 patients diagnosed with Bell's palsy., and care received	The average incidence rate of Bell's palsy was 25.7 cases per 100,000 per year. Most participants were female (86%), and the most affected age group was 21–30 years (44.4%).

Bell's palsy is the most common cause of acute peripheral facial paralysis, accounting for approximately 51–75% of all facial nerve palsy cases (Choi, 2023) he reported annual incidence worldwide ranges from 7 to 50 cases per 100,000 population, with geographical variation depending on study design and population characteristic regional studies in Saudi Arabia have demonstrated incidence rates ranging from 5.3 to 30.4 per 100,000 per year, indicating variability that may reflect demographic and environmental influences (Alanazi et al., 2022).

#### Pharmacological Therapy

The main approach to pharmacological therapy is the administration of corticosteroids to suppress inflammation and facial nerve edema. The most

commonly used regimen is high-dose prednisolone for 7–10 days with a gradual reduction in dosage. Corticosteroids have been shown to accelerate recovery and reduce the risk of complications such as synkinesis (Kim & Kwak, 2025).

Antiviral drugs such as acyclovir or valacyclovir may be administered, especially if there is evidence of herpes virus involvement. The combination of corticosteroids and antiviral drugs has shown benefits in severe cases, although its effectiveness is still debated (Kim & Kwak, 2025).

#### Non-Pharmacological

Therapy Physical therapy, facial muscle exercises, neuromuscular retraining, and acupuncture are widely used to support recovery, especially in patients with

slow improvement. Mime therapy has been shown to improve facial symmetry, reduce synkinesis, and improve quality of life (Gardner et al., 2025). Additionally, the use of eye drops, eye shields, or eyelid covers is crucial to prevent ophthalmological complications due to the inability to close the eyes. In severe cases or those that do not improve after several months, surgical interventions such as nerve decompression or reconstructive plastic surgery may be considered, although the risks are quite high (Danesh & Ouanounou, 2022).

### Prognosis

Most patients (70–90%) recover completely within 3–9 months, especially those who show improvement from the first week. However, a small number continue to experience long-term deficits such as facial asymmetry, synkinesis, and social-emotional dysfunction (Dalrymple et al., 2023).

### Implications in Dentistry

Bell's palsy can occur after dental procedures, particularly due to complications from local anesthesia or oral cavity infections. One mechanism is needling trauma to the facial nerve or the spread of anesthesia to the parotid gland. Additionally, patients with facial muscle weakness are at risk of poor oral hygiene due to difficulty closing their lips or controlling food intake, making dental care and oral hygiene education crucial (Danesh & Ouanounou, 2022).

### Conclusions

Bell's Palsy is the most common type of acute peripheral facial paralysis, and its cause is still considered unclear, although it is strongly associated with viral infections such as HSV-1 and VZV, as well as inflammatory and ischemic factors. In clinically diagnosing Bell's Palsy, it is important to rule out other causes of unilateral facial paralysis. Neurological, otological, and radiological evaluations are necessary to ensure the absence of other serious conditions. Treatment for Bell's Palsy includes drug therapy such as corticosteroids (prednisone) and antivirals (acyclovir), as well as combination therapy, which has been shown to be more effective in some more severe cases. Non-pharmacological rehabilitation is very important to speed up the recovery process and avoid complications, including physical therapy, facial exercises, acupuncture, and the use of eye protection. Generally, the prognosis is good, with 70–90% of patients experiencing a full recovery within a few months. However, some patients still face prolonged deficits. In the context of dentistry, it is important to understand the complications that may arise from dental procedures

and the need for special oral care for patients with Bell's Palsy.

Based on results review literature, it is suggested that research about Bell's palsy focused on the use of more diagnostic methods accurately like electromyography, ultrasonography, or MRI for predict prognosis, as well as evaluating effectiveness combination therapy pharmacological and rehabilitation face in speed up recovery. In addition, research carried on with design prospective multi-center and long-term follow-up long required for evaluating quality life patient as well as risk occurrence complications like synkinesis. With Thus, it is hoped that can obtain proof more scientific strong in determine standard comprehensive, patient-based management of Bell's palsy.

### Author Contributions

Susanna Halim conceptualized the research idea, while Sharon conducted the analysis, research process, and literature review. Both authors read and approved the final manuscript.

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### Conflicts of Interest

The authors declare no conflicts of interest.

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