Literature Review

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Speech-language rehabilitation in peripheral facial paralysis: integrative review

Reabilitação fonoaudiológica na paralisia facial periférica: revisão integrativa

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ABSTRACT

Purpose: identify and analyze the scientific production about the therapeutic strategies employed in the speech-language rehabilitation of people with peripheral facial paralysis. **Research strategy:** an integrative review was performed using the SciELO, PubMed, Web of Science, ScienceDirect and Portal CAPES databases. The descriptors were: facial paralysis and Bell's palsy, combined with rehabilitation, myofunctional therapy and Speech, Language and Hearing Sciences or their correlates in english. **Selection criteria:** studies available in their entirety, which addressed speech-language rehabilitation in people with peripheral facial paralysis, published between 1999 and 2019, in Brazilian Portuguese, english or spanish, were selected. **Results:** 650 publications were identified, but only five articles met the proposed inclusion criteria. Among these, SciELO and PubMed obtained two articles included each. In addition, most were published in the last ten years and produced in Brazil. Brazilian Portuguese was the language of publication of three of the five included, with no predominance of a specific level of evidence. The description of the procedures used was not sufficiently detailed in the studies. Isotonic and isometric exercises were approached more frequently. Bandage emerged as a therapeutic resource in one study. **Conclusion:** Although there are a large number of articles related to peripheral facial paralysis, only five studies described speech-language procedures for people with peripheral facial paralysis, with low level of evidence. Therefore, further studies addressing the topic are needed.

Keywords: Facial paralysis; Bell Palsy; Rehabilitation; Myofunctional Therapy; Speech, Language and Hearing Sciences

RESUMO

Objetivos: identificar e analisar a produção científica sobre as estratégias terapêuticas empregadas na reabilitação fonoaudiológica de pessoas com paralisia facial periférica (PFP). **Estratégia de pesquisa:** foi realizada uma revisão integrativa, utilizando-se as bases de dados SciELO, PubMed, Web of Science, ScienceDirect e Portal CAPES. Os descritores foram: paralisia facial e paralisia de Bell, combinados com reabilitação, terapia miofuncional e fonoaudiologia ou seus correlatos em inglês. **Critérios de seleção:** estudos disponíveis na íntegra, que abordaram a reabilitação fonoaudiológica em pessoas com PFP, publicados no período entre 1999 e 2019, em português brasileiro, inglês ou espanhol. **Resultados:** foram identificadas 650 publicações, mas apenas cinco artigos contemplaram os critérios de inclusão propostos. Dentre estes, a SciELO e PubMed obtiveram dois artigos incluídos cada. Além disso, a maioria foi publicada nos últimos dez anos e produzida no Brasil. O português brasileiro foi o idioma de publicação de três dos cinco artigos incluídos, não ocorrendo predominância de um nível de evidência específico. A descrição dos procedimentos utilizados não foi suficientemente detalhada nos estudos. Exercícios isotônicos e isométricos foram abordados mais frequentemente. A bandagem surgiu como recurso terapêutico em um estudo. **Conclusão:** embora haja um grande número de artigos relacionadas à PFP, apenas cinco estudos descreveram procedimentos fonoaudiológicos para pessoas com PFP, com nível de evidência baixo. Portanto, novos estudos abordando o tema são necessários.

Palavras-chave: Paralisia facial; Paralisia de Bell; Reabilitação; Terapia Miofuncional; Fonoaudiologia

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INTRODUCTION

Peripheral facial palsy (PFP) is a neurological condition caused by reduced or interrupted axonal transport to the facial nerve, resulting in partial or complete paralysis of the facial mimic muscles[1]. It has many causes, including idiopathic (Bell's palsy), infectious, systemic bacterial (local), traumatic, iatrogenic, and metabolic etiologies[2].

BP is the most common PFP cause in the population. According to the international literature, its yearly incidence rate is 11.5 to 40.2 cases per 100,000 inhabitants. This condition may also affect one in every 60 people throughout life, with peaks of incidence between 30 and 50 years old and between 60 and 70 years old. There seems to be no difference in frequency distribution per sex or impaired hemiface[3].

PFP sequelae cause important changes and difficulties in the life of those who are affected. The impairment of mimics and facial expression affects psychic and social aspects[4,5], with great impact on their appearance[6], difficulties in verbal and nonverbal communication, and, consequently, interpersonal relationships[4,5], besides anxiety, emotional stress, and depression[7].

As for the other orofacial functions, changes in muscle tone and strength are commonly found in PFP, causing changes in mimics and facial expression and inadequate bilabial and labiodental phoneme production. Difficulties in masticatory function are caused by the decrease in the orbicularis oris and buccinator muscle tone and strength, as a consequence of the paralysis/paresis in the affected hemiface. These people may have difficulties swallowing because of lip closure incompetence, resulting in food escape[8-10].

Given the many PFP causes and its functional and aesthetic impacts on the life of people with this condition, its treatment requires the work of a multidisciplinary team, which may include a physician (otorhinolaryngologist, ophthalmologist, and neurologist), physical therapist, psychologist, and speech-language-hearing (SLH) therapist[1,2]. Their teamwork enables these patients' comprehensive care and potentializes the evolution of the cases.

The work of an SLH therapist in the rehabilitation process in people with PFP aims to reduce the effects of paralysis on mimics and facial expression, speech, mastication, sucking, and swallowing[11-16]. Myofunctional rehabilitation requires the maintenance of muscle tone and readjustment of functional and aesthetic aspects[10].

When an SLH professional establishes myofunctional rehabilitation therapeutic strategies for people with PFP, they must seek the scientific literature for updates in SLH therapy in order to get prepared. hence, it is essential to summarize the SLH rehabilitation processes in PFP to make it easier for SLH therapists to look for new therapeutic programs and resources, optimizing their clinical practice.

OBJECTIVES

The objectives of this study were to identify and analyze the scientific production on the therapeutic strategies employed in the SLH rehabilitation of people with PFP.

RESEARCH STRATEGY

This study was methodologically designed as an integrative review of the literature. This research method enables the search, critical evaluation, and synthesis of evidence on a specific topic, and the results identify gaps, point to the need for further research, and help health professionals choose clinical procedures and make decisions[17]. The methodological design of the study was based on the following research question: "What types of therapeutic strategies do SLH therapists use in the myofunctional rehabilitation of people with PFP?".

The publications were surveyed between July and September 2019 in the following databases: Scientific Electronic Library Online (SciELO), PubMed, Web of Science – ISI, ScienceDirect, and the Portal of Journals of the Coordination for the Improvement of Higher Education Personnel (CAPES, in Portuguese). We chose these databases because they are the most researched and gather the main scientific journals in the health sciences. Moreover, they can be accessed either openly or via public Brazilian universities.

We used the following descriptors, identified in the Health Sciences Descriptors (DeCS, in Portuguese) to survey the publications in the databases: "*paralisia facial*" and "*paralisia de Bell*" in combination with "*reabilitação*", "*terapia miofuncional*", and "*fonoaudiologia*", or their corresponding terms in English (respectively, "facial paralysis", "Bell's palsy", "rehabilitation", "myofunctional therapy", and "speech, language and hearing sciences"). We used the following search keys: "facial paralysis" AND "rehabilitation", "facial paralysis" AND "myofunctional therapy", "facial paralysis" AND "speech, language and hearing sciences", as well as "Bell's palsy" with these same combinations.

SELECTION CRITERIA

We established the following inclusion criteria to select the publications for this review: scientific articles available in full-text, approaching SLH rehabilitation in people with PFP, published between 1999 and 2019, in Brazilian Portuguese, English, or Spanish. The exclusion criteria were as follows: duplicate publications and studies that did not describe the therapeutic strategies used in SLH rehabilitation of PFP.

The study selection had the following stages: 1) searching for publications in each database; 2) systematizing in Microsoft Office Excel 2016 all the studies identified by the researchers, for their control; 3) preselecting the studies, based on the inclusion criteria, and excluding the duplicate and unidentified articles; 4) selecting the articles that answered the research question (i.e., that addressed SLH rehabilitation of people with PFP) by reading the titles and abstracts, when available; 5) checking the publication sample selected from each database, which was done by a second evaluator; 6) reading the selected studies in full and extracting their data with a data collection sheet developed for this research; 7) defining the articles to be included in the review – i.e., those which described the therapeutic strategies used; 8) classifying the level of scientific evidence of the studies that had been included.

DATA ANALYSIS

We analyzed the selected articles based on the data we extracted with the data collection sheet, approaching the following variables of interest: database, year of publication, country of origin, language, title, objective of the study, sample characterization, therapeutic procedures, main results, conclusion, whether the article was included, and its level of evidence. We decided to analyze them because, after reading their titles and abstracts, we verified that they referred to some myofunctional therapeutic procedures aimed at rehabilitating people with PFP. These data were also analyzed in relation to the studies included. We made a bibliometric analysis of these identification data and systematized them to better understand the scientific productions on the investigated topic.

As for the included studies, besides the identification data, we systematized the information on the objective of the study, sample characterization, therapeutic procedures employed, main results, and conclusion. Additionally, all papers selected and included in this review were analyzed and classified according to the levels of scientific evidence established in 2005 by the American Speech-Language-Hearing Association (ASHA)[18] (Chart 1). Articles not classified according to these criteria were qualified as not applicable (NA).

RESULTS

In the database search stage, we found 650 publications. After applying the selection criteria and data analysis, five articles were included in this review (Figure 1).

Of the five databases, we observed a predominance of articles selected from PubMed (n = 14), being that only two studies were included in this integrative review from this database and SciELO. No article from ScienceDirect was either selected or included.

We identified 13 different countries in the sample of selected studies (n = 25), namely: Brazil, China, South Korea, United States of America (USA), Netherlands, India, Iran, Italy, Japan, Malaysia, United Kingdom, Czech Republic, and Tunisia. The countries were grouped in their respective continents, and we observed a predominance of publications on the topic in the American continent (40.0%). Three of the articles included (n = 5) had been conducted in Brazil, while the other two were from the Netherlands and Japan.

Regarding the language of publication, 76.0% (n = 19) of the 25 selected pieces of research were published in English, while the other 24.0% (n = 6) were in Brazilian Portuguese. Three out of the five studies included were published in Portuguese, and the other two, in English.

To describe the results obtained in this review regarding the therapeutic strategies employed in the rehabilitation of people with PFP, Chart 2 shows the data of the studies included – i.e., the objective of the study, the sample studied, therapeutic procedures investigated, main results obtained, and conclusion of the authors.

In Chart 3, we present the therapeutic strategies described by the authors in each of the studies included, encompassing the therapeutic program proposed (number and frequency of the therapy sessions).

The articles included in this review were classified as follows, according to ASHA: 1b/3b (high-quality randomized controlled trials/individual cohort studies or low-quality randomized controlled trials); 4 (clinical outcome studies); 6, 7 (expert opinion without explicit critical appraisal); NA. We did not observe a predominance of a single classification of the level of evidence among the studies included.

DISCUSSION

This study identified and analyzed publications that approached the therapeutic procedures used by SLH therapists in the myofunctional rehabilitation of people with PFP. As mentioned above, only five out of the 25 selected studies answered the research question – i.e., they described therapeutic strategies related to SLH practice. The other selected publications, though addressing therapeutic techniques to rehabilitate from PFP, either did not approach specific SLH clinical practices or did not describe in detail the procedures employed. Hence, few studies in the literature present or describe these procedures in detail.

The bibliometric analysis revealed that fewer studies were identified in SciELO in the search stage than in the other databases, whereas most selected articles were obtained from PubMed. Together, these two databases provided four[19,21-23] of the five studies included in the final sample (Figure 1). On the other hand, most studies were identified in ScienceDirect but none of them approached SLH interventions in PFP in

Chart 1. Levels of scientific evidence proposed by the American Speech-Language-Hearing Association

Levels of evidence	Types of study
1a	Systematic reviews or meta-analyses of high-quality randomized controlled trials
1b	High-quality randomized controlled trials
2a	Systematic reviews or meta-analyses of high-quality non-randomized controlled trials
2b	High-quality non-randomized controlled trials
3a	Systematic reviews of cohort studies
3b	Individual cohort studies or low-quality randomized controlled trials
4	Clinical outcome studies
5a	Systematic review of case-control studies
5b	Individual case-control studies
6	Case-series
7	Expert opinion without explicit critical appraisal

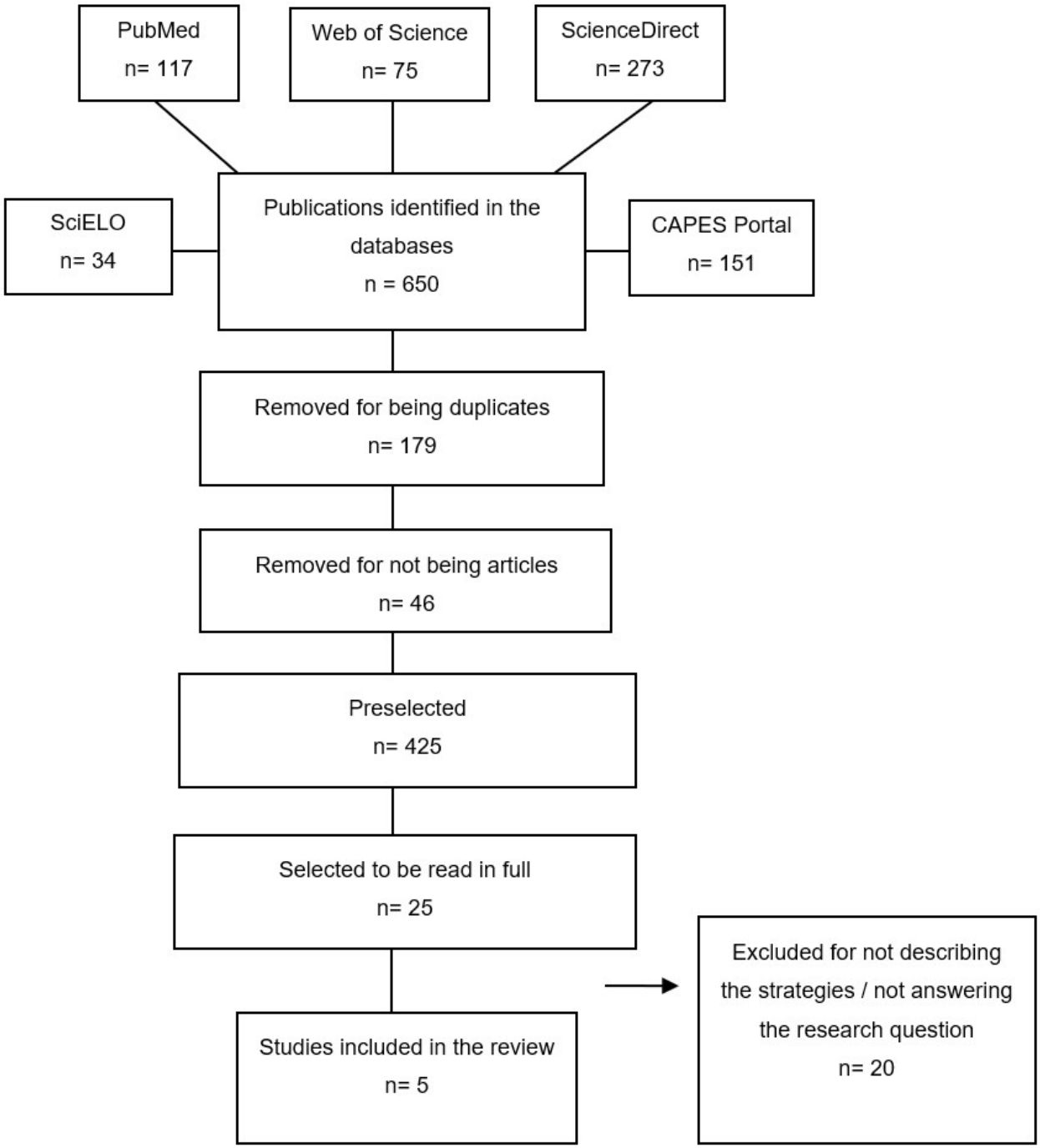

Figure 1. Flowchart of the process of identifying, selecting, and including the articles
Subtitle: n = number of articles; CAPES = Coordination for the Improvement of Higher Education Personnel

detail. Therefore, SciELO and PubMed seem to be the best sources of information for clinicians interested in rehabilitating myofunctional functions in PFP.

As for the year of publication, we observed that most of the articles had been published in the last 10 years – this pattern was also found in the studies included[20-23]. We found in the literature a study on orofacial myofunctional therapy, in which we observed a similar pattern[24] – which possibly results from the appearance of new therapeutic strategies and technologies, as well as the growth of the movement for evidence-based practice. This would explain the increase in SLH scientific production on the topic. We did not find other studies approaching the possible causes of the abovementioned pattern.

Concerning the distribution of publications per country of origin, Brazil stood out in the scientific production on SLH intervention in myofunctional rehabilitation of people affected with PFP in the American continent, whose strategies had been described in their methodologies. Thus, we can infer that SLH pathology in Brazil has a greater focus on the rehabilitation of people with PFP than in other countries, where there seems to be a greater focus on physical therapy.

Chart 2. Description of the objectives, sample, therapeutic procedures, main results, and conclusions of the studies included in the review

Authors / Year	Objectives	Sample	Procedures	Main results / Conclusions
Beurskens and Heymans (2006)[19]	To investigate the effectiveness of the therapy with mimics to reduce facial asymmetry in people with peripheral facial nerve paresis	48 patients (21 men and 27 women), with unilateral non-congenital paresis of the peripheral facial nerve for more than 9 months, divided into two groups: experimental group – EG (n=24) and control group – CG (n=24). The age of the participants ranged from 20 to 73 years, and the causes of the paresis included Bell's palsy, acoustic neuroma, herpes zoster oticus, and accidental trauma). The participants' average degree of paresis was IV. Level of evidence: 1b/3b	Individual therapy with mimics.	Main results: After 3 months of individual therapy with mimics, the facial symmetry improved in the EG (about 100%) in comparison with the CG (about 38%), according to the assessment scales used. The severity of the paresis decreased by 88% in the EG, in comparison with 0% in the CG. The ocular symmetry at rest was the only aspect that did not progress with the mimic therapy. The effects of this therapy were similar to both sexes, regardless of the age group and duration of the paresis. Conclusions: The mimic therapy proved to be effective to reduce and adjust the facial symmetry at rest and in movement, as well as the facial synkinesis. Though the therapy was conducted by physical therapists, the study reveals that this procedure can be done by speech-language-hearing therapists.
Magalhães (2009)[20]	To outline the speech-language-hearing care in its part as an additional therapeutic resource to improve oral functions of the stomatognathic system.	Literature review with studies published since 1995, conducted between March and December 2008, including articles of scientific journals and specific chapters that characterized PFP and its implications in the muscle and functional changes in the stomatognathic system, related to the speech-language-hearing oromyofunctional approach. Publications addressing central and congenital palsies and those with non-idiopathic causes were excluded. Level of evidence: 7	Orofacial muscle training with isometric exercises (associated with induction massage on the paralyzed side) and isotonic exercises, stimulation of the facial motor points, thermotherapy (ice and humid heat), relaxation and stretching exercises, using a mirror for visual feedback and electromyography for biofeedback.	Main results: The study found speech-language-hearing therapeutic strategies that contributed to facial symmetry rehabilitation, improving liquid and food retention in mastication and swallowing and articulatory coordination in people with PFP. The review does not describe measures and/or parameters to confirm the results. Conclusions: The therapeutic resources found can be the basis for speech-language-hearing care aiming to reestablish facial symmetry and oral functions of the stomatognathic system.
Tessitore et al. (2009)[21]	To assess the protocol proposed for the orofacial neuromuscular rehabilitation in peripheral facial palsy.	20 patients (14 men and 6 women), with PFP in the initial phase, selected regardless of etiology; 10 had PFP on the right and 10 on the left side. Their age ranged from 20 to 60 years, all with degree IV in the House-Brackmann classification. Participants with systemic diseases (diabetes, neurodegenerative diseases, etc.) and long-lasting PFP were excluded. Level of evidence: 4	Orofacial rehabilitation protocol of PFP.	Main results: The angle of the corner of the mouth was measured to assess the result pre- and post-treatment with the rehabilitation protocol employed. The mean angular measure of the corner of the mouth of the 20 research participants at the beginning of the treatment was 101.7°, whereas its final post-treatment mean was 93.8°, decreasing 7.9° between the assessments. Conclusions: The rehabilitation protocol approached is a recommended alternative for oromyofunctional rehabilitation of people with PFP, as its assessment proved it effective, increasing muscle tone and, consequently, significantly improving facial rest.

Subtitle: BP = Bell's palsy; PFP = peripheral facial palsy; SG = study group; CG = control group; NA = not applicable

Chart 2. Continued...

Authors / Year	Objectives	Sample	Procedures	Main results / Conclusions
Romão et al. (2015)[22]	To rehabilitate a patient affected with facial palsy after otomastoiditis with early speech-language-hearing intervention and describe the application of a different therapeutic intervention approach.	11-year-old male patient, with signs of otomastoiditis on the right side, in the flaccid phase. The assessment verified asymmetric smile, hypotonia of articulatory organs on the right hemiface and hypotonia of the right frontal muscle; hypertonia of the contralateral muscle, unilateral mastication (left), incomplete right eye closure, and liquid escape. Level of evidence: 6	Directed speech therapy with myofunctional isotonic and isometric exercises.	Main results: After applying the early speech-language-hearing intervention, which began in the same week of hospital discharge, the facial muscle movements returned symmetrically, with readjustment of muscle tone and orofacial functions in 9 sessions of speech-language-hearing therapy. The measures of the corner of the mouth pre- and post-intervention indicated the effectiveness of the intervention, with adjustment of rest (105.31 mm – 105.12 mm), faint smile (105.12 mm – 99.06 mm), and open smile (110.05 mm – 98.02 mm) on the right hemiface. Conclusions: The intervention approached helped obtain a satisfactory result, rehabilitating the orofacial musculature and restoring the facial symmetry.
Kasahara et al. (2017)[23]	To investigate the effectiveness of rehabilitation with tape feedback to prevent oro-ocular synkinesis deterioration.	12 patients (six men and six women) with first-time paralysis of the peripheral facial nerve (Bell's palsy or Hunt syndrome) and preserved cognitive capacity, divided into EG (n=6) and CG (n=6). Three people with BP and three with Hunt syndrome participated in SG. As for the CG, four people had BP and two, Hunt syndrome. Participants with other causes of facial palsy were excluded. The age range of the participants was not informed. Level of evidence: NA	Therapy with tape feedback.	Main results: All participants had a more sensitive recognition of movement of the corner of the mouth with tape feedback therapy (2.8) than with conventional finger sensory feedback therapy (1.1). The degree of synkinesis in EG decreased (1.8) in comparison with CG (2.6). The contraction of the corner of the mouth in eye closure and the nasolabial sulcus in EG was significantly weaker and more superficial than in CG. The degrees of the palpebral fissure and the position of the corner of the mouth were not significantly different. Conclusions: Despite some significant results, it cannot be stated that the tape feedback therapy was effective.

Subtitle: BP = Bell's palsy; PFP = peripheral facial palsy; SG = study group; CG = control group; NA = not applicable

Chart 3. Description of the therapeutic procedures found in the studies included in the review

Authors / Year	Therapeutic strategies approached
Beurskens and Heymans (2006)[19]	Session frequency: Once a week. Duration: 3 months. Procedures: - General instructions for home procedures (they are supposed to be done at home for 30 minutes every day); *The participants were trained to massage their face and neck for 10 to 15 minutes a day and do stretching exercises on the affected side to relieve the symptoms of synkinesis in the muscles involved. *Posteriorly, they were taught to recognize tension and feel the difference between tension and relaxation in general and, more specifically, in facial musculature. - Orofacial massage: a) specific exercises to coordinate the right and left hemifaces and decrease synkinesis; b) exercises (forehead wrinkle, eye closure, smile, growl, wrinkle the lips) with varying amplitudes and speeds; c) exercises for each side of the face to control separate movements, mandible, lip (smile, pouch), and eye relaxation, with simultaneous synkinesis inhibition (slow, small movements and contraction); d) stretching exercises for the eyelids to adjust eye closure, with varied speed and strength, not moving the lips; e) for lip closure, cheek-filling exercises were used with variables amounts of air, as well as eating and drinking exercises while keeping the eyes in open synkinesis. *Note: The exercises were performed with a mirror for feedback.
Magalhães (2009)[20]	Session frequency: Not informed. Duration: Not informed. Procedures: - In general terms, with a myotherapy approach associated with proprioceptive and exteroceptive sensitivity to the contraction of the paralyzed muscle, exercises can be used to favor increased tonicity of the relaxed musculature, improving the heat and blood supply in the region. - In the flaccid phase, the patient can use isometric exercises with the contraction of the muscles on both sides of the face, associated with induction massage on the paralyzed side. - Stimulating the motor points of the face can be an alternative, decreasing orofacial muscle contraction and improving blood flow and oxygenation of the tissues. Orofacial musculature stimulation involves active and passive stretching, increasing the sensory perception of each muscle involved, changing the muscle tone, and seeking orofacial myofunctional balance. - Thermotherapy with ice on the paralyzed side aims at the contraction of the paralyzed musculature via proprioception and exteroception reflex arc, as cold is perceived by the general somatic afferent fibers of the trigeminal nerve, which is connected in its sensitive core to the facial motor nucleus, contracting the face muscles by stimulation of the special efferent fibers of the facial nerve. - In the phase of movement recovery, the muscles begin to hint at some movements. At this moment, the speech-language-hearing therapist must require isotonic exercises to work muscle mobility without induction massage. - Using a mirror along with neuromuscular procedures favors visual feedback to control movement in the flaccid and movement recovery phases; it is likewise with electromyographic biofeedback, which has been used as a resource for visual and/or auditory feedback. - In PFP, neuromuscular training, besides instructing the client, improves the function and decreases contraction and synkinesis with isotonic orofacial myofunctional exercises, relaxation and stretching strategies associated with dissociation of the movements, and use of humid-heat thermotherapy for 5 minutes.
Tessitore et al. (2009)[21]	Session frequency: Once a week. Duration: 1 year. Procedures: - General instructions for home procedures for people in the initial phase of PFP, in which the musculature is flaccid. *Cares with the affected eye: reinforcing medical instructions about the use of eye drops and ointment, always sleep with an eye patch while instructed to, make sure the eye is closed, use eye drops whenever you feel the eye dry or burn, wear sunglasses when out in the sun, wear a hat (if necessary) and do not go out in the wind. *Instruction regarding orofacial maneuvers that make movements easier, which should be self-stimulated by the patient twice a day, before meals: slide the fingers up and down the forehead, slide the fingers above the eyebrows (distal to medial), slide the fingers over the cheeks (upward), slide the fingers on the lips and cheek (horizontally, simulating a smile), masticatory functional use on the paralyzed side (rest the fingers on the mandible base, on the affected side, to minimize food stasis in the vestibule). The indicated duration and number of repetitions were not informed.

Subtitle: PFP = peripheral facial palsy

Chart 3. Continued...

Authors / Year	Therapeutic strategies approached
	- Orofacial massage: activation of the motor areas and point on the face (frontal, nasal inferior, nostril, eye, labial, chin, and suprahyoid areas), for sensory stimulation: the motor areas (on both sides of the face) and the motor points (only on the paralyzed side) are activated; a suction cup is used on the paralyzed face to encourage muscle tone with its vacuum; intermittent vibration is used on the paralyzed side to increase muscle tone, continuing on the other side to decrease its muscle tone (which is hyperactivated), and functional requirement with inhibition of the healthy side and use of body strength associated with functional requirement (e.g., eye closure and concomitant use of strength with feet plantar support, activating the muscle chains, distal impulse – Vassalva maneuver; all possible facial movements are required in facial level: raising and joining eyebrows, closing the eyes, contracting the nose, inflating the cheeks, tightening the lips, pouching, smiling, and opening the corner of the mouths as wide as possible). The indicated duration and number of repetitions were not informed. - Posteriorly, perform the isotonic and isometric exercises described below: *Isotonic: a) Look at a fixed spot and blink (30 times); b) look down and close your eyes (30 times); c) quickly raise and lower the eyebrows (10 times); d) quickly join and relax the eyebrows (10 times); e) quickly contract and relax the nose (10 times); f) quickly alternate between pouching and smiling with closed lips (10 times); g) quickly alternate between pouching and smiling with open lips (10 times). *Isometric: a) raise the eyebrows and hold for 5 seconds (5 times); b) join the eyebrows and hold for 5 seconds (5 times); c) contract the nose and hold for 5 seconds (5 times); d) pouch and hold for 5 seconds (5 times); e) smile with closed lips and hold for 5 seconds (5 times); f) pouch with open lips and hold for 5 seconds (5 times); g) smile with open lips and hold for 5 seconds (5 times). *Note: In case of synkinesis, muscle contractures or spasms, use heat on the face in combination with intra- and extraoral slide maneuvers on the nasogenian sulcus to release the musculature.
Romão et al. (2015)[22]	Session frequency: Once a week with daily exercises. Duration: 63 uninterrupted days. Procedures: - General instructions to the patient (in all the sessions): a) always do the exercises in front of a mirror; b) you are not supposed to feel pain or discomfort; c) all the exercises must be performed in symmetry and balance, each exercise must be rigorously controlled for the movement to be symmetric and harmonious; d) do the exercises three times every day: morning, afternoon, and evening; e) take breaks in between the periods to rest and not fatigue the musculature; g) cares with the eyes: wear sunglasses, as well as micropore tape at night, to help completely seal the eyes. - Speech therapy performed with isotonic and isometric exercises: *Week 1: smile and massage with the fingers; close the eyes supporting with the fingers, contract and hold closed for 5 seconds; counter-resistance exercise with a spatula, push the spatula with the cheek as far as the teeth; vibrate the lips; suck a thickened liquid with a thick straw; facial massage in the direction of the muscle fiber (done only in the session); pouch and click the lips; click the lips without pouching; mastication exercise with the support of a rubber band. Time: 1 minute and 30 seconds per exercise. *Week 2: counter-resistance exercise with a spatula, preventing it from moving with the cheek; faint smile, supporting with the fingers 3 times and another 3 times without support; counter-resistance exercise with a spatula, push the spatula with the cheek as far as the teeth; close the eyes supporting with the fingers, contract and hold closed for 5 seconds; vibrate the lips; suck a thickened liquid with a thick straw; facial massage in the direction of the muscle fiber (done only in the session); pouch and click the lips; click the lips without pouching; mastication exercise with the support of a rubber band. Time: 1 minute and 30 seconds per exercise. *Week 3: add an exercise to the list: Pouch and hold a straw between the lips and nose. Time: 1 minute and 30 seconds per exercise. *Week 4: counter-resistance exercise with a spatula, preventing it from moving with the cheek; faint smile, supporting with the fingers 3 times and another 3 times without support; counter-resistance exercise with a spatula, push the spatula with the cheek as far as the teeth; close the eyes supporting with the fingers, contract and hold closed for 5 seconds; vibrate the lips; suck a thickened liquid with a thick straw; facial massage in the direction of the muscle fiber (done only in the session); pouch and click the lips; click the lips without pouching; blow out a candle. Time: 1 minute and 30 seconds per exercise. *Week 5: symmetric open smile without the support of the fingers; symmetric open smile with support of the fingers; facial massage in the direction of the muscle fiber (done only in the session, for 5 minutes); vibrate the lips; close the eyes supporting with the fingers, contract and hold closed for 5 seconds; suck a thickened liquid with a thick straw. Time: 2 minutes and 30 seconds per exercise. *Week 6: faint smile without support from the fingers, hold for 5 seconds; open smile without support from the fingers, hold for 3 seconds; mouth rinsing with water; fill a balloon without help; suck a thickened liquid with a thick straw; close the eyes supporting with the fingers, contract and hold closed for 5 seconds; facial massage in the direction of the muscle fiber (done only in the session, for 5 minutes). Time: 2 minutes and 10 seconds per exercise.

Subtitle: PFP = peripheral facial palsy

Chart 3. Continued...

Authors / Year	Therapeutic strategies approached
	*Week 7: open smile without support from the fingers and without lowering the lips, hold for 5 seconds; facial massage in the direction of the muscle fiber (done only in the session, for 5 minutes); suck a thickened liquid with a thick straw; close the eyes supporting with the fingers, contract and hold closed for 5 seconds; fill a balloon without help and hold for 10 seconds; join the eyebrows and help with the fingers in the direction of the movement; contract the eyebrows without help. Time: 2 minutes and 10 seconds per exercise. *Week 8: close the eyes without help and hold for 5 seconds, without contracting the corner of the mouth; mouth rinsing with little water; fill a balloon without help; suck a thickened liquid with a thick straw; join the eyebrows and help with the fingers in the direction of the movement; contract the eyebrows without help; make an angry face. Time: 2 minutes and 10 seconds per exercise. *Week 9: given the positive results, the patient was discharged in this session.
Kasahara et al. (2017)[23]	Session frequency: 3 sessions a day. Duration: 4 weeks. Procedures: - To avoid contraction of the corner of the mouth during slight eye closure movement, the training starts when the muscle contraction symptom is perceived on the affected side. - Tape feedback therapy A therapeutic adhesive tape was placed around the patients' lips to identify weak contractions, not with finger touch, but with superficial skin sensing around the mouth. The research participants were instructed to avoid moving the corner of the mouth on the affected side symmetrically with the non-affected side during eye closure – i.e., the eyes had to be closed as gently as possible to avoid mouth movements on the affected side, which would be noticed. The patients were prescribed 20 slow eye closures per session.

Subtitle: PFP = peripheral facial palsy

Two[21,22] of the studies included in this review were found in the CEFAC journal. In a recent literature review article[25] that analyzed clinical studies with interventions in oral-motor function in Brazilian SLH scientific journals, CEFAC was the main journal in which studies in such field had been published.

The overall objectives of the included studies varied, though three of them investigated the results of therapeutic approaches[19,21,23]. In the other two articles – one is a literature review[20] and the other, a case study[22] –, the objectives outlined the SLH interventions in cases of PFP, though with different levels of evidence.

The sample profile in the studies differed from one another. The sample size ranged from one to 48, totaling 81 participants in four[19,21-23] studies. The age range of the participants was from 11 to 73 years, with a predominance of men. As for their clinical condition, 20 participants were classified as paralysis degree IV in the House-Brackmann scale. The degree of the other ones was not specified, only its phase – regarding which, 33 patients were in the initial phase, while 48 had been affected for more than 9 months. The literature review that was included here[20] did not specify the samples of participants in those studies.

Of the four[19,21-23] studies that used measures to analyze the results of the therapeutic procedures, two measured the angle of the corner of the mouth pre- and post-intervention, validating the effective improvement of oromyofunctional aspects[21,22]. Beurskens and Heymans[19] used scales to assess orofacial aspects before and after the treatment, which confirmed the reestablishment of facial symmetry and a decrease in palsy severity. In this study, ocular symmetry at rest was the only aspect that remained the same after the intervention. As for the paper by Tessitore et al.[21], myofunctional assessment and palsy degree scales and photographic documentation were used to assess the results obtained with the therapy.

Concerning the conclusions obtained by the authors of the studies included[19-23] in this review, the favorable results of the SLH therapeutic procedures, with an increase in muscle tone and readjustment of facial symmetry, were not common points. Two of these protocols that had been proposed and analyzed were recommended by their authors for myofunctional rehabilitation in people with PFP[21,22].

A pattern was found in the instructions given to the patients in the therapeutic procedures – they should be made autonomously at home, in at least three articles[19,21,22]. The instructions addressed the manner how the participants should correctly perform orofacial massage and exercise. The studies[19,21,22] also had other instructions related to people with PFP, such as caring for the affected eye.

Even though the studies describe to some extent the therapeutic strategies, we verified that the descriptions were not detailed enough in some cases, as the authors did not provide important information for proper and precise clinical use of the strategies. All the included publications lacked information on the series and/or time to perform each exercise. A possible explanation for this is that the studies did not have a preestablished treatment protocol and that the SLH therapy is individualized – i.e., it depends on the complaints, SLH assessment results, and each person's limits.

Three studies approached isotonic and isometric myofunctional exercises as therapeutic procedures[20-22], though the review study[20] only referred to the possibility of using this type of exercise. The study by Kasahara et al.[23] used tapes as a therapeutic strategy with a quite specific objective: to investigate the effectiveness of this resource in preventing oro-ocular synkinesis deterioration. The tapes were recently incorporated into SLH practice as a therapeutic resource to optimize the therapeutic results[26]. This resource can be applied not only in facial palsies but also in oral-motor function, as effective results have already been demonstrated in its use as a complementary therapeutic method to reestablish such changes[27].

Regarding their therapeutic program, three studies suggested having sessions once a week[19,21,22]; also, the study by Romão et al.[22] indicated daily exercise. Another study[23] proposed an intensive treatment, with three sessions a day, which was also the only study that used tapes in its procedures. We also observed differences in the duration of the interventions, ranging from 1 to 12 months between the studies.

As for the classification into levels of evidence (Chart 1), five articles we selected did not meet the criteria established by ASHA, as the type of study was not on the scale. Of the included articles, only one did not meet the criteria of level of evidence[23]. In general, the selected and included studies that were classified had low levels of evidence. Thus, having or not described the therapeutic procedures they employed to treat PFP, they do not yet have robust scientific evidence to ground such practice. Nonetheless, we observed positive results when treating people with PFP using these interventions.

We pondered that these low levels of evidence limit the development of an SLH practice based on evidence, as the clinician finds difficulties replicating the therapeutic interventions because of the fragile criteria used to verify their effectiveness. Researchers must give priority to study designs that can find scientific evidence at higher levels and that are more adequate to the therapeutic method investigated, and include a full description of the intervention approach.

We believe this integrative review was limited by not assessing the methodological quality of the studies included, aiming at a more precise classification into levels of scientific evidence. Incorporating formal instruments to assess research quality in this type of review can help better understand the qualitative level of knowledge production on the topic.

Given the above, we highlight the need for further research due to the scarcity of studies on SLH rehabilitation in people with PFP. Moreover, future investigations must have an adequate methodological design, such as randomized controlled clinical trials, thus decreasing the risks of bias and increasing the possibility of generalizing the results for more assertive and appropriate clinical decision-making.

CONCLUSION

Few studies address SLH protocols or therapies for PFP in detail, with a strong level of evidence, and enabling clinical applicability.

As for the therapeutic strategies found, we observed a pattern in the studies regarding the instructions given by the therapists, consisting of the methods to perform the exercise at home. On the other hand, they lacked information on the therapeutic program, such as the number of series and/or duration of the interventions. Most procedures approached isotonic and isometric exercises. Elastic tapes appeared as a therapeutic resource to potentialize SLH therapy.

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