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METHODS TO ENHANCE SPEECH PATHOLOGISTS' PROFESSIONAL QUALIFICATIONS IN COLLABORATIVE WORK

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ABSTRACT

This article proposes and outlines the essential role that speech-language pathologists (SLPs) play in oral health care, particularly in the context of speech therapy following major dental surgery in pediatric and geriatric populations. After major dental surgery, individuals may encounter a range of challenges related to speech and communication.

We emphasize the importance of collaboration between dentists and SLPs for pediatric patients with orofacial myofunctional disorders (OMDs), which refer to changes in the musculature of the mouth, face, and cervical areas that affect the growth, development, or functionality of orofacial structures and processes.

The craniofacial complex comprising bones, teeth, muscles and nerves, demonstrates significant adaptability influenced by both genetic and environmental factors, facilitating essential functions such as sensory perception and communication. The intricate anatomy and functions of the face contribute to sensory and motor tasks encompassing olfaction, vision, hearing, and taste. Hence, the collaborative efforts of speech-language pathologists and dentists are crucial for managing patients with concurrent dental, linguistic, and swallowing difficulties.

Dentists play a vital role in diagnosing, preventing, and treating disorders of the oral cavity and surrounding structures by addressing congenital and acquired conditions affecting the teeth, jawbones, and associated tissues. Orthodontists are critical in correcting dental and skeletal misalignments, such as malocclusion, and in facilitating healthy craniofacial development. Similarly, pedodontists possess specialized skills to meet the dental and communicative needs of children. They significantly contribute to early identification and intervention regarding developmental issues, ensuring comprehensive oral health and promoting timely communication development.

In conclusion, a multidisciplinary approach, characterized by the synergistic collaboration between SLPs and dentists, is vital for addressing both dental health and communication challenges. Encouraging healthy communication skills in children hinges on effectively addressing related dental and speech difficulties (Bryan & Gibbons, 2022).

Key words: *speech and language pathologies, speech therapy, communication development, oral health care, major dental surgery, pediatric patients, geriatric populations, orofacial myofunctional disorders, musculature of mouth and face, sensory and motor functions, swallowing difficulties.*

INTRODUCTION

Speech-language pathologists (SLPs) specialize in evaluating and diagnosing language disorders and communication difficulties, as well as developing targeted interventions. They work with diverse age groups, striving to enhance communication and expressive language skills. A critical focus of their work is preventing oral function problems and managing mouth movements throughout various life stages from infancy through adulthood to elderly populations.

Anatomical differences, particularly in children with cleft lip or palate, can significantly impact the oral cavity, leading to challenges in sound production. For instance, these children may struggle with plosive sounds, experience hypernasality characterized by overly nasalized speech or face language delays (Nagarajan, Savitha, & Subramaniyan, 2009).

The collaborative efforts between dental professionals and speech-language pathologists are crucial for addressing a spectrum of orofacial conditions. This interdisciplinary approach ensures that patients receive comprehensive care, particularly those experiencing challenges related to myofunctional disorders, speech impediments, and craniofacial anomaly. By combining proficiency in dental health and communication sciences, these clinicians can more efficiently detect and manage complications affecting oral function, respiration, and general development, resulting in enhanced patient outcomes. By integrating expertise in dental health and communication sciences, these professionals can more effectively diagnose and manage conditions that impact oral function, breathing, and overall development, leading to improved patient outcomes (Feştilă, Ciobotaru, Suciu, Olteanu & Ghergie, 2025).

This collaborative diagnostic method enables the early detection of dentofacial disharmony that could affect speech articulation, hence enhancing treatment planning and functional outcomes. (Bode et al. 2023; Costanzo, Puleio, Lo Giudice, Alibrandi & Campione, 2024). This integrated communication facilitates early intervention that can prevent the advancement of malocclusion and related speech disorders (Fontoura, 2021). Preliminary multidisciplinary evaluation has demonstrated efficacy in treating speech sound disorders linked to dentofacial malformations, highlighting the importance of integrated care (Bode et al., 2023; Chandrashekhar, Bommangoudar, Shetty & Sidral, 2020). Thus, the incorporation of orthodontic assessment with speech therapy protocols enables focused therapies that tackle both structural and functional problems, thereby enhancing therapeutic results (Bode et al., 2023; Heit et al., 2022; Vanz, Rigo, Vanz, Estacia & Nojima, 2012).

In Armenia and globally, it is essential to enhance the professional qualifications of speech-language pathologists to effectively implement therapeutic methods and practices. Continuous professional development is a critical component of this enhancement. In the 21st century, a one-time primary education is inadequate as a prerequisite for becoming a special educator or speech-language pathologist. Therefore, the current demands of a rapidly evolving and expanding educational system necessitate the implementation of qualification enhancement programs, particularly in developed countries (Hovyan, Harutyunyan, Papoyan, Kosyan, & Margaryan, 2025).

The concept of continuous professional development (CPD) serves as a foundation for collaborative work among health professionals, emerging as a critical prerequisite for the reconstruction and implementation of educational system reforms. Scientific studies have highlighted the necessity of improving the professional qualifications of speech-language pathologists (SLPs) through the diagnosis and evaluation of speech disorders, followed by the implementation of targeted speech therapy. This pursuit requires new approaches supported by multi-level and extensive scientific investigations aimed at enhancing the competencies of speech therapists (Kalfayan Ashekian, 2025; Costanzo, Puleio, Lo Giudice, Alibrandi & Campione, 2024).

A primary challenge in ensuring ongoing professional development for SLPs often lies in the selection of collaborative practices, especially in scenarios where a child or adult with a speech disorder needs the intervention of various medical professionals. This concern is particularly pertinent regarding the assessment of articulation disorders, maxillofacial surgeries, and issues like lip and tongue ties that are crucial for correcting conditions such as apraxia of speech and rhinophonia, as well as voice problems (e.g., Phonasthenia, dysphonia, aphonia, dyslalia, and chronic laryngitis). The effective selection of medical and pedagogical approaches for treatment is fundamentally dependent on close collaboration among professionals.

Importantly, the choice of appropriate interventions to address speech disorders often proves

unfeasible without the cooperation of SLPs. Moreover, no existing model for continuous professional development specifically caters to paramedical professionals, including speech pathologists, in Armenia. This gap limits the establishment of state-defined standards necessary for organizing complementary and ongoing professional development (Morrison, McKee & Hovey, 2021).

To address these challenges, it is essential to establish a new model for continuous training and professional development for speech therapists in Armenia. This model must align with legislative changes resulting from educational reforms and integrate functional research alongside innovative teaching and evaluation methods. The aim is to equip professionals with the requisite knowledge, skills, and competencies that reflect recent educational advancements. Furthermore, this initiative must adhere to the standards set by the World Health Organization (WHO) under the International Classification of Functioning, Disability, and Health, emphasizing the evaluation, prevention, treatment, and rehabilitation of speech disorders within educational settings. Efforts to address speech issues in children must occur in schools, thereby fostering opportunities for new scientific inquiries in this field of research (Kalfayan Ashekian, 2024).

METHODOLOGY

Our research was conducted at prominent institutions, including the Yerevan Dental Center, the Speech Therapy Department of the Izmirlian Medical Center, and Sarkissian DDS and Harmony Speech Therapy & Diagnostics in Los Angeles, California. In this context, we emphasize the need for collaborative approaches to correcting dyslalia, rhinolalia, and voice disorders. Such cooperation with medical professionals is critical for delivering effective speech therapy, considering the specificities of postoperative and orthodontic care.

Study Design

This article utilizes a qualitative, descriptive review design, integrating evidence from recent clinical practices, interdisciplinary collaboration models, and peer-reviewed literature to highlight the role of speech-language pathologists (SLPs) in the oral rehabilitation process following major dental interventions. The methodology is structured to analyze and synthesize existing knowledge across dentistry, orthodontics, pedodontics, and speech-language pathology.

Data Collection

Information was gathered through a comprehensive literature review from few databases: PubMed, Scopus, Web of Science, Google Scholar.

The search was restricted to studies and guidelines published between 2012 and 2023. Keywords used included:

- *"speech therapy after dental surgery"*

- *"orofacial myofunctional disorders (OMD)"*
- *"interdisciplinary dental care"*
- *"SLP and dentist collaboration"*
- *"pediatric speech disorders post-dentistry"*
- *"craniofacial development and speech"*, etc.

Relevant clinical guidelines, systematic reviews, case studies, and position papers from recognized associations (e.g., American Speech-Language-Hearing Association, American Dental Association) were also analyzed.

Inclusion Criteria

- Studies involving pediatric (0–18 years) and geriatric (65+ years) patients undergoing major dental interventions.
- Research that involved collaborative approaches between SLPs and dental professionals.
- Literature that included functional outcomes related to speech, swallowing, or myofunctional therapy.

Exclusion Criteria

- Studies focused solely on cosmetic dentistry.
- Articles not available in English.
- Reports lacking clinical relevance to communication or swallowing functions.

Analytical Approach

The selected literature was thematically coded into categories such as:

- Postoperative speech deficits,
- Orofacial muscular rehabilitation,
- Swallowing difficulties post-surgery,
- Early intervention protocols in dental-SLP collaboration.

Emergent themes were compared across pediatric and geriatric populations, with particular attention to:

- The timing of referral and intervention,
- The role of SLPs in the management of OMDs,
- The impact of craniofacial growth or degradation on speech and feeding functions.

Additionally, existing collaborative models were evaluated to understand barriers and facilitators to multidisciplinary care planning, with an emphasis on functional rehabilitation outcomes.

RESULTS, AND DISCUSSION

Our research primarily focused on developing a clearly defined collaborative work process for

speech and language therapy in children and adults who have undergone medical interventions for speech disorders. This focus stemmed from the pressing need to ensure the continuous professional development of professionals involved in speech and language development. The detection, study, diagnosis, prevention, and correction of speech disorders are among the most critical challenges in speech therapy, emphasizing the significance of therapeutic work in promoting proper pronunciation development.

Inadequate development of the articulation system and difficulties with phonetic perception significantly influence learners' literacy processes. We argue that speech therapy addressing articulation disorders specifically dyslalia and rhinolalia among Armenian-speaking children should be prioritized in elementary grades. These foundational years are crucial for establishing spelling and orthography skills (Bryan & Gibbons, 2022; American Academy of Pediatric Dentistry, 2021; Aslanyan, 2021a). Dyslalia, recognized as the most common phonological disorder in preschool and elementary education, impedes the learning process due to persistent and repetitive pronunciation errors. These errors hinder the development of phonetic and articulation functions, making early intervention imperative.

Special attention is warranted regarding the implementation of appropriate methods for preventing and correcting dyslalia, alongside ongoing collaboration with native language instructors in the early grades. To address these challenges, we recommend integrating methods for correcting dyslalia, rhinolalia, and other phonetic disorders, facilitated through collaboration with medical professionals. Such collaboration will enhance practical logopedic efforts in more social contexts as well.

Often, the post-surgical cases involving orthodontists and oral surgeons are overlooked, which should inform our methodology regarding pronunciation correction and voice disorder treatment. Additionally, the lack of awareness among parents, educators, and teachers complicates the challenges surrounding pronunciation and voice disorder correction, particularly in the context of universal inclusivity, where multiple professionals may be involved in intervention efforts.

To support these objectives, our methodological recommendations focus on several key areas essential for understanding and addressing speech disorders in children. First, we advocate for investigating children’s ontogenesis to delineate the stages of speech development, which is crucial for identifying typical versus atypical progression. Additionally, determining the extent and nature of speech disorders will provide a clearer picture of the challenges faced by affected children. Clarifying the underlying causes of these disorders is vital for tailoring effective interventions. Furthermore, we emphasize the need for developing robust evaluation methods that can accurately assess speech disorders, which will enhance the effectiveness of treatment plans. Establishing coordination mechanisms among professionals and implementing appropriate correction techniques are critical to fostering comprehensive support for these children. Lastly, we highlight the importance of enhancing preventive strategies and improving logopedic assistance protocols to ensure early identification and intervention, ultimately facilitating better outcomes

for children with speech disorders.

Through the implementation of these strategies, we hope to facilitate a more comprehensive approach to diagnosing and treating speech and language disorders, ensuring enhanced professional collaboration and improved outcomes for affected individuals.

Application of Theoretical and Practical Materials

The theoretical and practical materials can be effectively utilized by the pedagogical staff of special educational institutions, public schools, and rehabilitation centers. These resources aim to address the speech needs of Armenian-speaking children with articulation disorders, thereby enhancing both the educational and social adaptation processes. The materials also promote the application of specialized methods and the organization of speech therapy-oriented games.

Acoustic Characteristics of Speech Phonemes

The acoustic characteristics of language phonemes define the phonetic qualities of speech. Language sounds originate from the physical vibrations of air waves produced by the articulators of speech. However, phonemes are limited both by the auditory organs that perceive them and by the speech apparatus responsible for their production (Aslanyan & Grigoryan, 2022).

Phonetics examines various aspects of sound, such as type, pitch, strength, timbre, duration, and tension. Tone is produced through periodic fluctuations of the vocal cords, whereas noise results from non-periodic vibrations of pronunciation organs, such as the lips (Aslanyan & Grigoryan, 2022). The pitch of a sound is influenced by the number of vibrations, as well as the length and distance of the vocal cords. The amplitude of these vibrations determines the intensity or power of the sound.

Language sounds consist of a primary tone considered the strongest sound and overtones (subtones), which are secondary. The main tone defines the pitch, while the overtones contribute additional qualities known as timbre. Timbral quality arises from the combination of the main tone, noise, harmonic subtones, and resonant tones. It distinguishes sounds with the same pitch, intensity, and duration; for instance, it enables differentiation between musical instruments like the piano, violin, and duduk, which may produce sounds at the same tonal height.

The duration of sound refers to the time it is emitted, characterized by the frequency of specific vibrations, and it can vary based on speech pace (Aslanyan & Grigoryan, 2022). Absolute duration pertains to the length of language sounds, influenced by the temporal units required for sound production.

Resonance and Tension in Sound Production

Sound resonance occurs when sound waves transiting through the oral cavity encounter no obstructions, maintaining their integrity and allowing them to be perceived as tonal or vocal sounds. Periodic sound waves gain distinct overtones characterizing vowels, resulting in fuller articulation and perception of the vowel sound. This fullness of sound is referred to as resonance.

Resonance is contrasted with sound tension, which describes the firmness of the barrier formed during sound articulation. The degree of tension directly affects sound resonance: the weaker the tension used in articulation, the more resonant the sound. Conversely, greater tension results in diminished resonance. Thus, it can be inferred that the resonance of sounds is inversely proportional to their tension.

Sound Tension and Speech Regulation

The tension of sounds reflects the strength of the barrier created during articulation. A stronger barrier results in greater disturbance and weakening of sound waves, potentially leading to their complete extinction. Conversely, a weaker barrier allows sound waves to traverse more easily, resulting in a more powerful sound (Aslanyan & Grigoryan, 2022).

Understanding this dynamic is crucial for regulating pronunciation processes, particularly in situations where a dentist has performed prosthetic procedures or implanted palates and teeth in children with rhinophasia (rhinocerosis). In such cases, the methodology of speech therapy should focus on addressing language polyphony and associated sound issues.

Language Variations and Pronunciation Challenges

The plurality of languages introduces a diversity of pronunciation abilities. Rare sounds, such as the Armenian consonants /dz/, /tʃʰ/, and /ts/, are not found in many other languages. Consequently, Armenians may struggle to pronounce sounds like the English /th/ or the German /pf/, and similarly, speakers of other languages may find it challenging to produce these specific sounds (Aslanyan & Grigoryan, 2022).

Oral articulations are closely tied to the vibrations of the vocal cords. Oral sounds are formed during oral pronunciation when the soft palate elevates, effectively separating the oral cavity from the nasal cavity, which prevents air from escaping through the nostrils during speech and swallowing. In developing surgical interventions, logopedic work must be guided by the advice of relevant medical professionals, particularly orthodontists and dentists. This cooperation is essential to prevent postoperative complications and to implement appropriate corrective methods, underscoring the necessity of continuous professional training and collaboration among specialists.

Phonetic Variances in Armenian and Speech Therapy Challenges

Given that Armenian is rich in voiced consonants, the primary challenges in speech therapy during the postoperative period relate to the correction of these sounds. As previously noted, phonetic bases across various languages display subtle distinctions. These distinctions can also manifest within regional variations of the same language. For instance, English pronunciation differs among British, American, and Canadian speakers, and there are notable variations between Eastern Armenian and Western Armenian pronunciations (Kalfayan Ashekian, 2024).

Pronounced phonetic differences exist within dialects of the same language; the sounds of the literary language, particularly vowels, exhibit significant variations in different dialects. Dialectology

employs methods that reveal the characteristic phonetic features inherent to each dialect (Kalfayan Ashekian, 2024).

Speech and Learning Process

The learning process is intricately connected to speech. Incorrect pronunciation, limited vocabulary, grammatical errors, and reading and writing disorders can hinder knowledge acquisition and verbal communication, adversely impacting an individual's overall development (Aslanyan & Grigoryan, 2022).

The Syllable as a Phonetic Unit

In the phonetic structure, the syllable stands as the next significant volume after a sound. A syllable is defined as the minimum natural unit of pronunciation in a language's sounds. While syllables may not convey meaning on their own, they serve as fundamental sound units within words, comprising sounds or groups of sounds pronounced in a single breath. Thus, a syllable can be characterized as a singular pronunciation unit (usually a vowel or a combination of a vowel and consonants) within the pronunciation chain (Aslanyan & Grigoryan, 2022; Aslanyan, 2021b).

Articulation and Sound Production

Producing a specific language sound necessitates the coordinated effort of multiple speech articulators. The generation of any sound requires these articulators to work in unison and in a precise sequence, an intricate process that a speech therapist can optimize through effective medical consultation and collaboration.

Phonetic pronunciation encompasses various actions including physiological, motor, and expiratory functions that culminate in the production of a phonetic unit (sound or syllable), along with the development of phonetic properties and their formation.

The Scientific Basis of Sound and Letter

The relationship between sound and letter, though seeming simple, necessitates a scientific examination, especially in relation to communication difficulties. It is essential to highlight that techniques for correcting pronunciation issues must correspond with the pedagogical frameworks of the primary language. This alignment will improve the effective implementation of logopedic procedures in society. The distinctive characteristics of the primary language, Armenian, are frequently disregarded, rendering comprehensive research imperative.

The Mechanism of Pronunciation

The articulation of language sounds is complicated by the fact that it involves the activity of several articulators. The mechanism responsible for producing the articulation of a particular phonological unit is referred to as the articulator. Even in rapid pronunciation, speakers prepare for upcoming pronunciation units, often without completing the previous sound (Aslanyan & Grigoryan, 2022).

There are three main stages in the pronunciation of a phonetic unit (sound): entry, storage, and

conversion. In the pronunciation of the "T" sound, the process involves several actions: the vocal cords move apart, a weakening occurs, the soft palate rises, pressing against the back wall of the oral cavity, and the tongue's tip touches the upper teeth.

In contrast, the pronunciation of voiceless consonants such as /p/, /k/ exhibits minimal phonetic behavior. Conversely, sounds like /l/, /m/, /n/, or voiced consonants like /b/, /g/, and /d/ display clear phonetic behavior. The conversion phase occurs when the articulators, after completing the production of a given sound, return to a neutral position or get ready for the articulation of the next sound. For instance, in the word "tram," the tip of the tongue elevates toward the hard palate while the vocal cords stretch and come together. Rapid conversion can influence the impending sound, potentially leading to the shift of an unvoiced consonant to a vowel sound or causing vowel weakening (Aslanyan & Grigoryan, 2022; Aslanyan, 2021b).

Challenges in Mastering Pronunciation

Mastering tone can involve variances, timing discrepancies, and mistakes in sound production. As children adapt to their speech environment, they generally confront challenges that they often learn to overcome independently. However, children or individuals who have undergone surgery, implantation, or prosthetic procedures face persistent difficulties in acquiring the correct pronunciation system. These challenges are compounded by the complexity of language sounds, as clients must learn to perceive and reproduce them accurately.

During the perception process, a child is exposed to the phonetic diversity of the fundamental units of language. They must be able to identify and isolate the necessary pitches within a continuous flow of sounds. Recognizing sounds by their distinctive characteristics is essential for distinguishing one sound from another. If a child fails to develop this ability, they will struggle to differentiate between words and recognize them consistently across various contexts of speech.

As speech develops, a child's auditory discrimination evolves, predicated on their ability to distinguish and recognize sounds. This development of auditory skills is critical, as phonetic listening involves following sounds in a continuous stream of syllables. Since sounds are vocal manifestations of pronunciation, they must be articulated in accordance with the standards established by the language system; otherwise, listeners may find them difficult to comprehend (Aslanyan & Grigoryan, 2022).

The Role of Speech Organs in Sound Production

Children with speech disorders often experience specific challenges in speech development directly related to the anatomical structures involved in respiration and sound formation. Phylogenetically, there are no distinct organs exclusively for sound and perception; rather, humans have adapted general anatomical structures for speech and auditory functions throughout historical development.

The organs of speech can be categorized into two main groups:

Respiratory Chambers: This group includes the lungs, bronchi, and respiratory tract. The lungs contract and expand, supplying air to the articulatory chambers, producing vibrations necessary for sound creation. The bronchi serve as extensions of the lungs, branching into two bronchial paths. During respiration for speech, air flows through the respiratory system. Notably, the volume of air entering the lungs is greater than the volume exiting, ensuring that sufficient air remains available to create the necessary vocal cord vibrations. Proper spoken respiration facilitates harmonious sound formation aligned with the outgoing air current.

Articulators: These are the structures actively and passively involved in sound formation. Active articulators (moving) and passive articulators (immovable) work together to produce speech sounds. Among the essential active articulators, the throat (larynx) is pivotal in sound production. Key structures within the larynx include:

- Thyroid Cartilage: This prominent structure houses the vocal cords and is often most easily identified as the "Adam's apple."
- Arytenoid Cartilages: These brick-shaped, mobile structures are located within the larynx and play a crucial role in vocal cord function. The vocal cords, attached to the thyroid cartilage in the front and resting on the trachea at the back, form the glottis.

When air is expelled from the lungs, it passes through the larynx, causing the vocal cords to vibrate, which generates sound. This intricate interplay between air flow and articulators in speech production

The soft palate, often described metaphorically as a curtain, plays a vital role in speech therapy. When elevated, it blocks airflow to the nasal cavity, effectively separating the nasal passages from the oral cavity. Conversely, when it lowers, it allows air to flow into the nasal cavity, influencing speech sounds produced.

The tongue is instrumental in sound production, capable of executing a diverse range of movements due to its three major components: the front, middle, and back. Additionally, the tongue's surface can assume various configurations, such as curled or flattened. Together with other oral articulators, the tongue transforms sound waves into distinct sounds.

Lips also contribute significantly to sound production by adopting rounded or spread positions, a flexibility that enhances their ability to produce various speech sounds. The lower jaw operates as one of the active articulators. Passive articulators consist of the upper and lower teeth (along with the gums, known as alveoli), hard palate, upper jaw, and nasal cavity.

These oral articulators can come close to each other, interacting and creating barriers that obstruct the outflow of air. Where these barriers form, noise necessary for consonant formation is generated. The upper and lower teeth, along with the hard and soft palates, serve as principal operational sites, while the nasal cavity contributes resonant qualities to certain sounds; thus, some sounds resonate not only in the

mouth but also in the nasal cavity.

It is important to note that speech articulators do not function in isolation. The role and actions of each articulator during pronunciation are characterized by their interdependence and interaction with one another (Grigoryan, 2023; Aslanyan & Grigoryan, 2022).

Importance of the Oral Cavity in Sound Production

The oral cavity plays a crucial role in sound production, housing various active and passive articulators essential for speech. The active articulators are: Upper and lower lips, upper and lower teeth, alveolar ridges (gums), hard palate, soft palate (velum), and tongue.

The passive articulators are: Structures that do not move, providing points of contact or obstruction for airflow; these include the same upper and lower teeth, along with the hard palate.

The coherent functioning of all these components is necessary for successful articulation. Modern logopedics, which draws from general principles of special education, intersects with several scientific disciplines such as psychology, anatomy, physiology, and linguistics. This multidisciplinary approach views speech as a multifaceted existence that significantly impacts systematic psychological development.

Causes of Speech Disorders

Organic disorders can arise from various prenatal infections, including those occurring during pregnancy and infections that affect the fetus postpartum, such as meningitis and meningoencephalitis. These conditions can lead to significant developmental challenges (Hovyan, Harutyunyan, Saratikyan, Muradyan, Marukyan & Grigoryan, 2025).

Functional causes may not directly alter the structure of the speech apparatus but can substantially hinder normal functioning. Examples include prolonged stressful situations, frequent illnesses in children, an inappropriate speech environment, inadequate pedagogical support, negative parental attitudes, and overly harsh corrections regarding speech development (Costanzo, Puleio, Lo Giudice, Alibrandi & Campione, 2024). Prompt intervention is essential to prevent the escalation of these issues into secondary and tertiary problems.

The Complexity of Phonetic Development

The formation of the phonetic aspect of speech is a complex process wherein a child learns to perceive the speech directed toward them and manage its reproduction through their speech apparatus. Effective development of pronunciation is not only a crucial factor in communication but also a critical element in teaching the mother tongue. Inadequate development of the pronunciation system and issues with sound perception can significantly complicate learners' educational experiences, including literacy development.

For instance, apraxia, a neurological disorder characterized by the inability to plan and execute coordinated movements, can affect speech capabilities despite intact muscle function (Rausch, 2023).

Specifically, acquired apraxia of speech often emerges following brain injuries, such as strokes or trauma, impacting neural regions responsible for planning and coordinating the movements necessary for speech production. This underscores the importance of addressing pronunciation and communication disorders in a holistic and timely manner.

Impact of Apraxia After Dental Surgery

In the context of dental surgery, apraxia can temporarily hinder an individual's ability to execute specific oral movements, complicating tasks such as manipulating food or articulating speech. Patients who have undergone dental procedures and subsequently experience apraxia may struggle with word articulation and daily activities requiring oral motor skills, such as chewing and swallowing. This condition can lead to dissatisfaction in communication, affecting day-to-day interactions and overall quality of life.

Apraxia is often managed through targeted speech and language therapy. In this therapeutic approach, a speech-language pathologist works collaboratively with the patient to enhance motor planning and improve speech production. Rehabilitation efforts aim to restore essential oral skills and foster better communication, ultimately promoting participation in social and functional activities. It is equally important to address any discomfort or difficulties associated with the dental procedure to support recovery.

Neurophysiological Implications

The disruption of neural circuits responsible for motor planning can lead to the development of apraxia, a condition sometimes aggravated by trauma caused during dental operations. Patients may exhibit many symptoms, including linguistic impairments, speech inconsistencies, and difficulties with nonverbal abilities, such as mastication and proper mouth closure. Numerous factors, such as post-operative edema, discomfort, and changes in the oral environment, may aggravate these difficulties, resulting in heightened dissatisfaction and limiting efficient communication. To maximize the benefits of targeted speech and language therapy, it is important for patients to communicate any issues they encounter to their healthcare practitioners. Therapy techniques often utilized include modeling and repetition, which focus on enhancing motor planning and coordination to facilitate the recovery of communication abilities. The significance of early intervention cannot be overstated, as it plays a crucial role in optimizing healing and mitigating long-term impacts on speech and overall quality of life (Rausch, 2023).

Connection with Orofacial Myofunctional Disorders

The presence of Orofacial Myofunctional Disorders (OMDs) can further complicate communication, swallowing, and general oral function for patients. OMDs involve dysfunctional patterns of oral and facial muscle use, which may intensify challenges following dental surgeries, such as tooth extractions or orthodontic interventions. The physical changes in the oral cavity resulting from these procedures can exacerbate pre-existing conditions or even trigger new complications.

Given this context, a comprehensive approach to post-surgical care is paramount. This approach

should encompass not just physical healing but also targeted speech therapy and myofunctional therapy. These therapeutic interventions aim to address the motor planning and muscular function issues arising from both apraxia and OMDs, ultimately leading to improved communication abilities and enhanced quality of life for affected individuals.

Understanding the interplay between dental surgery, apraxia, and OMDs is essential for healthcare professionals. This knowledge enables them to provide holistic care that effectively supports patients' speech and overall oral health needs (Orofacial Myology, 2024).

Apraxia and Dental Surgery: Impacts on Functionality

Following dental surgery, apraxia can emerge because of factors such as anesthesia, pain, or swelling, all of which can negatively impact muscle control and coordination in the mouth and throat. Patients may struggle with articulating words or performing simple actions, such as lifting a drink or placing food in their mouths. The severity and duration of apraxia can vary considerably from person to person. Contributing factors include the complexity of the surgical procedure, the type of anesthesia administered, any pre-existing neurological conditions, and individual recovery processes.

For patients experiencing apraxia following dental surgery, open communication with healthcare providers regarding any difficulties encountered is essential. Rehabilitation strategies, such as occupational therapy or speech therapy, can be pivotal in helping individuals regain normal function. Incorporating supportive techniques such as practicing simple movements or utilizing adaptive tools can further enhance recovery outcomes (Mount Sinai, n.d., August 2025).

The Role of Speech Therapy Post-Surgery

Speech therapy plays a critical role after major dental surgery, particularly in pediatric and geriatric populations. It addresses specific communication and swallowing challenges that may arise following surgical interventions.

Dental procedures in children can profoundly affect speech development and articulation, frequently resulting in reluctance to communicate due to discomfort or worry. Speech therapy seeks to enhance confidence in verbal abilities by concentrating on the improvement of articulation, fluency, and the management of swallowing difficulties to guarantee sufficient nourishment during recovery. Collaborative therapeutic activities can build a nurturing atmosphere that promotes successful communication.

Dental surgery in the older population can aggravate pre-existing conditions, including decreased motor control and sensory impairments, hence complicating speech and swallowing. Speech-language pathologists personalize their interventions to improve communication precision and facilitate safe swallowing. These therapies include training sessions aimed at improving mouth musculature and enhancing vocal quality. The participation of speech-language pathologists is crucial for both demographics, promoting efficient communication and safe swallowing, which are fundamental for

rehabilitation and overall quality of life (Morrison, McKee & Hovey, 2021).

Challenges in Pediatric Dental Patients

In pediatric patients, oral surgeries can affect the alignment and function of teeth and oral structures, potentially resulting in challenges with articulation and phonation. Children may also face emotional challenges during recovery, impacting their willingness to communicate or engage in conversations. Speech-language pathologists can implement targeted interventions to assist these children in recovering their speech capabilities and promoting appropriate communication skills post-surgery.

Challenges in Geriatric Dental Patients

The impacts of substantial oral surgery in elderly people can significantly differ from those in pediatric patients. Older persons may encounter challenges like reduced motor control, modified sensibility, and chronic oral health problems, all of which can negatively impact speech and swallowing abilities. This group frequently possesses pre-existing problems that hinder healing. Speech-language pathologists play a vital role in assessing and treating speech and swallowing difficulties in elderly patients' post-dental surgery. They offer customized techniques that encourage safe eating and drinking habits, alongside activities designed to strengthen mouth muscles and improve speech clarity (Bryan & Gibbons, 2022).

Supporting Development in Pediatric Patients

Given that children are in critical phases of speech and language development, dental issues can significantly hinder their capacity to articulate sounds or produce speech clearly. Speech therapists work closely with pediatric patients to address changes in their speech patterns, helping them regain confidence in communication and ensuring their language development remains on track. This assistance may involve exercises designed to strengthen oral musculature, improve articulation, and enhance overall communication skills.

Therapy may include tailored exercises that focus on vocal quality enhancement, muscle strength, and coordination, along with strategies to compensate for any loss of function. By addressing the distinct challenges presented by each age group, speech therapists play a crucial role in facilitating recovery and supporting effective communication (American Academy of Pediatric Dentistry, 2021).

Methodological Foundations for Speech Disorder Correction

The scientific foundation for proper methodological criteria, resources, and procedures in the rehabilitation of speech impairments in Armenian-speaking youngsters can substantially improve the verbal capacities of affected learners. This is possible when speech therapists utilize scientifically proven, experimentally developed techniques that depend on effective collaborative efforts. Evaluating linguistic needs, executing modifications, and coordinating consultation efforts while employing strong scientific and practical techniques can substantiate the logopedic process effectively.

We advocate for systematic logopedic approaches that align with the accepted paradigms of basic language instruction. A structured strategy like this will make it easier to include logopedic methods that honor the distinctive phonetic features of the Armenian language. This alignment is essential for identifying, assessing, and coordinating initiatives to address pronunciation challenges among pupils, thereby assisting children in overcoming their speech difficulties and enhancing their learning processes.

As previously discussed, collaborative efforts and ongoing training are essential for effective assessments and the selection of appropriate logopedic methods. These practices enable informed conclusions regarding the organization of a child's education, the establishment of necessary special conditions, and the implementation of support services. This collaboration can include advisory visits to educational institutions and the organization of training sessions to ensure all stakeholders are aligned and informed about best practices.

To achieve the specified objectives, multiple research problems were formulated. A thorough literature assessment was performed to examine and evaluate diverse viewpoints on the research issue as recorded in scholarly literature. Examining the support programs pertinent to the issues at hand and the extant criteria for logopedic evaluation was a component of this. Secondly, the study examined collaborative assessment initiatives between speech-language experts and medical practitioners in performing evaluations. The practical value of scientific, methodological, and educational materials was examined, emphasizing their influence on pedagogical-psychological specialists working with children with speech difficulties. Finally, an evaluation was conducted to examine the knowledge of medical professionals concerning logopedic assessments, including their awareness of available services that conform to established standards and individual service program instruments.

To address these problems, we have examined and studied specialized literature on functional assessment, as well as scientific works that outline the methodologies for structuring logopedic tests for children with speech disorders. We also analyzed material concerning developmental psychology and physiology in relation to children with speech difficulties (Hovyan, Harutyunyan, Saratikyan, Muradyan, Marukyan & Grigoryan, 2025; Bryan & Gibbons, 2022).

Specialized literature directly tied to the research problem has been surveyed and synthesized, allowing for the identification of key trends in developing theoretical and practical approaches necessary for communication and speech development among children with speech disorders. This effort aims to expand the accessibility of educational psychological services for these children (Grigoryan, 2023; Bryan & Gibbons, 2022; Harutyunyan & Hovyan, 2018).

Enhancing Professional Development

It is essential to initially assess the present condition of supplementary and ongoing professional development for speech therapists in Armenia. This involves teaching innovations and establishing updated

guidelines for educational assessments designed to measure children's individual educational requirements using specific training instruments. Such actions are crucial to guarantee the continuous professional advancement of the participating teams. In this context, educational training is a crucial component of Armenia's educational system, aimed at modernizing the content, structure, and processes of vocational education. Additionally, it seeks to enhance the cultural awareness for lifelong learning, emphasizing its significance in the holistic advancement of educational professionals.

In conclusion, this initiative addresses the ongoing challenge of effectively equipping specialists in general and vocational education with the necessary skills and resources to support children with speech disorders. Our research underscores the critical need for accessible professional theoretical and practical materials in the realm of educational psychological support. The findings from our study reveal that a structured approach combining standard analyses with continuous training and supplementary resources can empower professionals in enhancing their practices.

We anticipate a marked improvement in the logopedic process, ultimately enabling specialists to offer high-quality, tailored support to children in need. Cultivating a training-oriented environment is essential for ensuring that education professionals are adept at addressing the diverse needs of their students, thereby facilitating effective communication and language development.

Moving forward, it is essential to promote collaborative efforts within this field, highlighting the significance of interdisciplinary partnerships that can greatly enrich the educational landscape. Our commitment to ongoing professional development and a focus on the unique requirements of each learner will help foster a more inclusive and supportive environment for children facing speech challenges. By prioritizing these partnerships and focusing on actionable strategies derived from our research, we can ensure that every child has the tools and support necessary to succeed in their communicative journeys.

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