

Periodontal Considerations and Prosthodontic Rehabilitation in Patients with Special Health Care Needs: Clinical Challenges, Adaptive Treatment Planning and Multidisciplinary Approaches: A Narrative Review

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Abstract

Patients with Special Health Care Needs (SHCN) experience marked oral health disparities that stem from complex medical, developmental, behavioral and functional conditions. Periodontal disease is especially prevalent in this group, driven by impaired oral hygiene, immune dysregulation, neuromuscular limitations, medication-induced gingival changes, sensory sensitivity and dependence on caregivers. Conditions such as Down syndrome, cerebral palsy, epilepsy and autism spectrum disorder carry distinct periodontal and behavioral risks that complicate diagnosis, treatment planning and long-term maintenance. This narrative review examines the periodontal profile of patients with SHCN and the adaptive prosthodontic strategies available to restore function. Drawing on recent literature, it argues that rehabilitation should prioritize comfort, access to hygiene, safety and maintainability rather than prosthetic complexity and that periodontal stability must precede definitive restoration. Successful care depends on individualized planning, a preventive emphasis, caregiver engagement and close interdisciplinary collaboration, increasingly supported by digital workflows, teledentistry and integrated care pathways that improve access and long-term outcomes.

Keywords: Special Health Care Needs; Periodontitis; Prosthodontic Rehabilitation; Supportive Periodontal Therapy; Multidisciplinary Care

Introduction

Patients with Special Health Care Needs (SHCN) constitute a diverse population whose physical, developmental, intellectual, sensory, behavioral, emotional or medical conditions require individualized approaches and specific adaptations during dental care [1]. As the American Academy of Pediatric Dentistry notes, these conditions can substantially affect a person's ability to maintain oral health and to access dental services [2]. The scale of this population is considerable. The World Health Organization estimates that 1.3 billion people, roughly 16% of the global population, live with a significant disability [3]. In the United States, more than a quarter of adults (28.7%) report some form of disability, while 26.2% of children and adolescents have been identified as having special health care needs,

representing over 19 million individuals [4,5]. Despite these numbers, people with SHCN continue to face wide disparities in access to care and poorer health outcomes than the general population [6,7].

Several barriers compound one another to produce this gap: financial constraints, reliance on caregivers, transportation difficulties, limited access to preventive services and a shortage of clinicians trained to treat patients with special needs [8,9]. Together, these obstacles translate into oral health outcomes that lag well behind those of the wider population [10].

Oral health is closely tied to general health and quality of life, shaping nutrition, communication, social interaction, self-esteem and psychological well-being [4]. Among the oral diseases that affect this group, periodontal disease is one of the most prevalent and clinically significant chronic conditions [11,12]. Its importance is amplified by the link between periodontal health and systemic conditions that are common in patients with special needs, including diabetes, epilepsy, Down syndrome, autism spectrum disorders and cerebral palsy [13,14].

Immunological abnormalities, motor limitations, difficulty maintaining hygiene, long-term medication use and caregiver dependence can all raise susceptibility to periodontal disease, while chronic periodontal inflammation can in turn, erode general health [15,16]. As a result, patients with special needs face a higher risk of periodontal tissue destruction, premature tooth loss and functional impairment, which underscores the need for preventive and therapeutic strategies built around their specific requirements [17,18].

Advanced periodontal disease and tooth loss can compromise chewing, nutrition, communication and social participation, all of which weigh on quality of life [19]. Prosthetic rehabilitation is therefore a vital part of comprehensive care; yet conventional prosthodontic protocols do not always address the functional, behavioral and maintenance realities of this population, so individualized planning and execution are frequently required to reach acceptable clinical and functional outcomes [20,21].

Because evidence on adapted rehabilitation remains limited, this narrative review analyzes periodontal considerations and prosthetic rehabilitation needs in patients with special health care needs, addressing clinical challenges, adaptive treatment planning and the role of multidisciplinary care in improving access, continuity and oral health outcomes [22,23].

Periodontal Profile of Patients with Special Health Care Needs

Patients with SHCN show a higher incidence of periodontal disease, chiefly gingivitis and periodontitis, than the general population. Many have physical, cognitive or neurological limitations that make adequate oral hygiene difficult and some depend on family members or caregivers for basic tasks such as toothbrushing [25]. In one recent study, 31.6% of patients with SHCN presented with periodontal disease and 76.1% of the dental treatment delivered to this group was related to periodontal problems, highlighting the value of periodontal prevention and follow-up [26].

Susceptibility varies with the underlying condition. Individuals with Down syndrome are among the highest-risk groups; a recent meta-analysis found they are almost four times more likely to develop periodontitis than people without the condition and they also show greater probing depth, gingival bleeding and clinical attachment loss [27]. This elevated risk is not explained by hygiene alone: abnormal neutrophil function and an exaggerated inflammatory response contribute directly to periodontal breakdown [28].

Cerebral palsy is likewise associated with frequent periodontal problems. Motor limitations hamper effective brushing and promote plaque accumulation, so these patients often present with greater gingival inflammation, calculus and poor oral hygiene; caregiver assistance is often essential to maintain periodontal health and slow disease progression [29,30]. In epilepsy, certain medications act directly on the gingival tissues. Phenytoin is the anticonvulsant most often linked to drug-induced gingival enlargement and the resulting overgrowth makes oral hygiene more difficult, traps plaque and increases the risk of inflammation; therefore, regular periodontal review and reinforced oral hygiene are important [31,32]. People with Autism Spectrum Disorder (ASD) face additional obstacles to periodontal health. Sensory processing differences, communication difficulties and resistance to changes in routine can make daily brushing and dental visits challenging [33]. Recent reports indicate that between 59.8% and 69.4% of patients with ASD have some degree of periodontal disease and active involvement of parents and caregivers is central to improving hygiene and lowering risk [34,35].

Finally, many of the conditions seen in patients with special needs involve chronic inflammation and altered immune regulation, which can increase both susceptibility to tissue destruction and the pace of disease progression [36,37]. For all of these reasons, clinicians must build preventive and therapeutic strategies that are individualized to the patient rather than generic, with the goal of protecting oral health and quality of life [38].

Clinical Challenges in Diagnosis and Treatment Planning

Communication and Behavioral Barriers to Periodontal Examination

Communication and behavioral difficulties are among the most common obstacles to a reliable periodontal examination in patients with special needs [39]. Limited cooperation can curtail probing and charting, while an incomplete or second-hand history reduces the accuracy of symptom reporting [40]. Because the patient may not be able to describe pain, bleeding or sensitivity, the clinician often relies on the caregiver to fill in gaps and interpret behavioral cues [41]. Tailored communication strategies, extra chair time and caregiver involvement are therefore not optional refinements but practical prerequisites for an adequate assessment [22,42].

Modified Periodontal Indices and Assessment Tools for SHCN Patients

Traditional periodontal risk tools depend on consistent clinical interpretation and a complete record of patient complexity, both of which are harder to obtain in this population [43]. To reduce that variability, machine-learning-based clinical decision support systems have been proposed to standardize periodontal risk evaluation [44]. By combining clinical, behavioral and historical inputs, an artificial intelligence-empowered system can offer more reproducible risk estimates and support decision-making when the patient picture is incomplete or atypical [23].

Radiographic Considerations: Positioning, Cooperation and CBCT Versus Periapical Limitations

Imaging is frequently the step where cooperation breaks down, particularly for patients with cognitive or behavioral conditions such as autism. Reported adaptations include visual aids, desensitization tools, practice kits, timers, hearing protection and other behavioral supports that improve tolerance during acquisition [44]. When standard panoramic or periapical projections are not feasible, techniques with shorter exposure times can increase the likelihood of obtaining a usable image [46]. Importantly, clinical reports show that when conventional radiographs are obtained successfully, they still deliver enough diagnostic detail for sound diagnosis and treatment planning, so escalation to advanced imaging is not always necessary [24].

Anesthesia and Sedation Decisions for Periodontal Therapy

The choice among nitrous oxide, oral sedation and general anesthesia depends on the severity of behavioral limitation, the patient's medical status and the complexity of the planned treatment [47]. Nitrous oxide and oral sedation are often enough for mild to moderate cases, whereas general anesthesia is reserved for patients with severe disability or an inability to cooperate, allowing comprehensive treatment to be completed safely in a single controlled session [25].

Informed Consent: Legal Guardians, Capacity and Shared Decision-Making

Contemporary consent practice for patients with special needs is increasingly framed by the Human Rights Model of Disability, which emphasizes autonomy, dignity and participation [48]. This stands in contrast to traditional substituted decision-making, which leans on formal capacity assessment and frequently transfers the decision to a legal guardian [49]. The human rights approach instead favors supported decision-making, in which adapted communication and caregiver involvement help the person understand and participate in clinical decisions, preserving autonomy as far as the situation allows [26].

Prosthodontic Rehabilitation: Adaptive Protocols and Evidence

Once periodontal risk, diagnostic limitations, behavioral factors and consent have been addressed, prosthodontic rehabilitation becomes central to restoring function in patients with special health care needs [50]. In this population, treatment is not simply about replacing missing teeth; it is about selecting a prosthesis that can be tolerated, cleaned, maintained and used safely over time [51]. This section reviews adaptive prosthodontic protocols and the evidence supporting implant-supported, fixed, digital and minimally invasive options [52].

The guiding principle is to deliver a functional, maintainable prosthesis that fits the patient's medical, behavioral and social context [53]. Patients may present with limited manual dexterity, neuromuscular disorders, parafunctional habits, reduced

cooperation, sensory sensitivities or full dependence on caregivers for daily hygiene. For these reasons the most advanced or most rigidly fixed option is not always the best one [54]. Planning should weigh periodontal stability, access for cleaning, caregiver capacity, the realistic ability to attend recall visits and the patient's tolerance of clinical procedures. In selected cases, removable prostheses, simplified designs or implant-supported overdentures are more appropriate than fully fixed restorations because they are easier to clean, repair and monitor [55].

Current evidence indicates that implant-supported rehabilitation can succeed in selected patients with Down syndrome, provided case selection and maintenance are handled carefully [56]. A systematic review concluded that Down syndrome should not be treated as an absolute contraindication to implant therapy, while cautioning that the limited high-quality evidence and the potential for complications call for conservative interpretation and long-term follow-up [27]. A scoping review reinforced this, noting that implant rehabilitation in this group must account for anatomical, physiological and behavioral factors that influence surgical planning, prosthetic design, hygiene and recall compliance [57,58]. Evidence in cerebral palsy similarly shows that fixed dental prostheses can be used, although prosthesis survival may be affected by neuromuscular status and comorbidities such as epilepsy [29]. These findings argue for careful evaluation of functional risk before committing to a fixed design [59].

Adaptive planning should prioritize function, comfort, safety, hygiene and maintainability over prosthetic ambition. A clinical report on full-mouth rehabilitation in a quadriplegic patient showed that an implant-supported overdenture may be preferable to a fully fixed design when caregiver-assisted hygiene and ease of maintenance are the dominant concerns [30,40]. Digital fabrication can further individualize care by enabling customized designs for patients with behavioral challenges, such as autism and self-injurious behavior [41]. In the same spirit, minimally invasive prosthetic rehabilitation in Down syndrome can balance oral function against medical, behavioral and family-related factors [42]. Across these examples, the design responds to the patient's daily limitations and support system, not only to the extent of tooth loss.

In sum, prosthodontic rehabilitation in patients with special health care needs should be individualized, realistic and interdisciplinary [43]. The best treatment is rarely the most complex one; it is the one the patient can safely tolerate, use and maintain overtime. That conclusion leads directly into the next section, which examines the collaboration among prosthodontists, periodontists, physicians, caregivers and the wider dental team [44].

Multidisciplinary Approach and Integrated Care Models

The Prosthodontist within the SHCN Care Team

Patients with special health care needs often combine intricate medical, cognitive, psychological and functional profiles that strain conventional dental protocols. Achieving complete oral rehabilitation, therefore, usually requires a coordinated, multidisciplinary effort [45]. Data from tertiary centers show that integrated clinical pathways improve access to necessary therapy, optimize clinical outcomes and enhance patient safety, particularly when intravenous sedation, general anesthesia or major reconstruction is involved [46]. Patient-centered frameworks similarly call for close alignment between dental and medical teams to manage oral disease and systemic conditions together [47]. Within this collaborative structure, the prosthodontist often serves as a coordinator, directing treatment design and connecting specialties to ensure that periodontal, structural and esthetic goals remain compatible with the patient's overall health [48].

Collaboration with Neurologists

Neurological conditions involving the masticatory system pose real obstacles to prosthetic rehabilitation. Impaired oral-motor control can disrupt chewing, articulation, swallowing, mandibular movement and the clinical integration of a prosthesis [49]. The neurologist is a key partner in identifying the underlying neuromuscular cause and shaping treatment, since craniofacial movement disorders are easily mistaken for temporomandibular joint disease, sleep bruxism or psychological distress, thereby delaying appropriate care [50]. Oromandibular dystonia deserves particular attention because uncontrolled hypertonia of the jaw, tongue and perioral muscles can impair nutrition, speech and social interaction; coordinated neurological and dental management can meaningfully reduce that functional burden [51]. The prosthodontist's role extends beyond tooth replacement to the design of appliances that modulate neuromuscular behavior and modified interocclusal appliances have been reported to improve chewing, speech clarity, tolerance and the stabilization of involuntary mandibular movement [52]. Disordered somatosensory processing and altered occlusal awareness can also produce persistent oral discomfort even when a prosthesis

meets ideal technical standards, which is why neurosensory factors deserve attention during reconstruction and why clear dialogue between prosthodontist and neurologist supports stable, long-term adaptation [53,54].

Collaboration with Physical Therapists

Physiotherapists are an integral part of the care network when musculoskeletal problems affect the masticatory apparatus. Temporomandibular joint disorders frequently extend beyond local damage to provoke secondary neuromuscular and craniocervical effects that undermine masticatory performance and the predictability of prosthetic treatment, so cooperation between prosthodontists and physical therapists helps control biomechanical variables that would otherwise compromise outcomes [55]. In a randomized controlled trial, Patra and colleagues found that an integrated program of craniomandibular stabilization combined with manual therapy produced greater pain relief, less palpation tenderness and improved mandibular range of motion than standard care [56]. A systematic review by Alowaimier and colleagues likewise concluded that conservative, patient-centered options should be first-line for temporomandibular disorders, with multimodal protocols pairing manual therapy, education and splint therapy that outperform any single modality [57]. Beyond local symptoms, these disorders can disturb whole-body balance; patients with temporomandibular disorder have shown poorer postural stability, higher kinesophobia and reduced spinal mobility than healthy controls, which is a further argument for including physical therapists in the team [58].

Collaboration with Speech-Language Pathologists

Speech-language pathologists are essential when structural defects, neurological conditions or tumor surgery impair speech and swallowing. Rebuilding teeth or oral structures does not, by itself, restore normal function, so working closely with speech therapists is necessary to help patients communicate and recover their daily quality of life, especially after complex surgery [59]. A systematic review by Artopoulou and colleagues reported that patients fitted with specialized augmentation prostheses after cancer-related glossectomy gained significant improvements in speech, swallowing and quality of life and that structured speech rehabilitation supports oral-motor function during early adaptation [42,60]. Obturator prostheses that seal the communication between the mouth and the nasal cavity allow many patients to speak clearly again early in recovery and combining the prosthesis with structured speech therapy yields durable results and better social integration when progress is judged by both patient-reported and clinician-measured outcomes [43].

The Role of Caregivers in Long-Term Oral Rehabilitation

Caregivers are a cornerstone of the interdisciplinary network and directly influence the long-term success of periodontal treatment and prosthetic rehabilitation [61]. As cognitive, physical or neurological impairment progresses, many patients gradually lose the capacity for self-care and responsibility for daily hygiene, prosthesis management and clinical follow-up shifts to family members and care staff [52]. Evidence from Alzheimer's disease shows that as cognition declines, active caregiver involvement becomes essential to control plaque, clean dentures, detect emerging pathology and keep appointments; where structured involvement is missing, plaque accumulation, periodontal breakdown, opportunistic infection and prosthetic failure follow more quickly [44,53]. The same dependence is decisive in long-term care facilities, where staff often face limited training, short staffing and few clear protocols; embedding caregiver education, interprofessional communication and structured oral health routines into daily care is therefore vital to sustaining rehabilitative results [45,54].

Periodontal-Prosthodontic Sequence: Stability Before Definitive Restoration

Periodontitis history and peri-implantitis risk

A history of periodontitis is one of the most consistent risk factors for biological complications around implants. Although implants enjoy high overall survival, patients with a periodontal background face greater vulnerability to peri-implant bone loss, soft tissue infection and eventual fixture failure [46]. The risk scales with past disease severity: patients who experienced rapid bone loss, namely grade C periodontitis or advanced stage III and IV disease, are at highest risk of accelerated breakdown and implant loss [47]. A joint multi-organization consensus identified previous periodontitis, smoking, poorly controlled diabetes and high alcohol intake as the principal drivers of peri-implant disease, with smoking and prior periodontitis acting as common denominators in the shift from reversible mucositis to irreversible peri-implantitis, so these variables must be prioritized in planning and maintenance [48]. A history of periodontitis is never an outright contraindication to implant therapy, but it demands careful baseline assessment, complete control of active inflammation and a strict, lifelong supportive program [62].

Long-term implant survival in periodontal patients

Because periodontitis is common and can compromise restorative outcomes, implant survival in affected patients remains a focus of study. A meta-analysis limited to prospective cohorts showed that a history of periodontitis significantly raises the probability of implant failure: the relative risk was 1.62 times higher in the first five years and rose to 2.26 after five years, while these patients also showed roughly four times the incidence of peri-implantitis and greater marginal bone loss around the implant neck [46]. A complementary systematic review confirmed that prior periodontitis is associated with higher peri-implantitis rates, lower survival and greater marginal bone destruction than in healthy controls and that thorough periodontal therapy before surgery substantially improves the outlook without fully eliminating the inherent risk [49]. The practical message is that implants in these patients require an integrated framework of strict infection control, routine monitoring and lifelong supportive care and that complete periodontal stability must be secured before any implant-supported prosthesis is constructed [63].

Long-term success and periodontal maintenance

Long-term implant success depends heavily on structured supportive maintenance. A 20-year prospective trial found that, after thorough initial therapy, enrolling patients in customized recall yielded an overall fixture survival of 93% at two decades; patients with a history of severe bone loss who stayed fully compliant achieved survival equal to periodontally healthy controls, whereas missing appointments increased the risk of implant loss roughly fourteen-fold, which shows that compliance matters more than periodontal history alone [50]. A review of tissue stability under supportive therapy confirmed that regular visits markedly lower recurrent pocketing, bone loss and fixture failure and recommended risk-based recall intervals rather than uniform schedules, with low-risk patients reviewed annually and moderate to high-risk patients seen every three to six months [51]. Effective programs combine radiographic monitoring, probing, mechanical biofilm removal and reinforcement of home care; patients previously treated for peri-implant disease require especially close surveillance because bacteria readily recolonize treated surfaces [52].

Supportive periodontal therapy and prosthodontic rehabilitation

Supportive periodontal therapy is a lifelong, individualized strategy that follows active treatment of severe stage IV periodontitis and is the most reliable way to maintain stability, prevent recurrence and protect later reconstruction. Because active infection alters healing, definitive prosthodontic rehabilitation should not begin until inflammation is fully controlled and the remaining dentition is stabilized [53]. In advanced cases, restorative options include tooth-supported bridges or implant-supported full-arch prostheses, chosen according to residual bone, tooth prognosis and functional demand [64]; long-term tracking shows comparable overall survival for both approaches, although implant-supported frameworks tend to experience more mechanical and technical complications, so preserving strategically sound natural teeth while keeping the patient in ongoing supportive care remains the most predictable path to lasting function [54].

Biological complications in prosthodontic rehabilitation

Biological complications associated with restorative work commonly include plaque accumulation, gingival inflammation, attachment loss, secondary caries and changes in the supporting tissues [65]. Long-term observation of fiber-reinforced composite fixed bridges shows acceptable overall quality but consistently greater plaque retention and higher attachment loss at the abutment teeth than at natural, unrestored teeth, underscoring the need for continuous professional cleaning and personalized home care [55]. By contrast, prospective data on CAD/CAM partial crowns show favorable biological performance over several years, with low rates of deep pocketing or pulpal inflammation and most failures attributable to mechanical debonding rather than biological breakdown [66]. Taken together, these findings indicate that durable success under fixed restorations depends less on material chemistry than on tight biofilm control, adherence to recall intervals and healthy tissue at the crown margins [67].

Hospital Dentistry and Mobile Dental Units for Non-Ambulatory Patients

The need for alternative care models

Non-ambulatory patients with SHCN meet substantial barriers to conventional dental care. Dependence on caregivers, transport difficulties, financial constraints and physical impairment, compounded by a shortage of clinicians trained in special care, frequently delay treatment until acute symptoms appear, which limits the chance for prevention and early intervention [57,68]. The consequences reach beyond local disease: people with disabilities consistently show more untreated disease and greater unmet need than the general population and research on acquired brain injury, including stroke and traumatic injury, points to

a clear need for accessible pathways for medically vulnerable patients [58,59]. In response, hospital-based services and mobile dental units have emerged to expand access and continuity of care for those who cannot attend traditional clinics [69].

Hospital dentistry for complex medical and behavioral needs

Hospital-based dental care is fundamental for patients whose physical, systemic or behavioral conditions make outpatient treatment unsafe or unworkable, including those with severe intellectual disability, autism spectrum disorder, neurodegenerative disease, multiple comorbidities or marked behavioral challenges [70]. A central advantage is direct access to general anesthesia and deep sedation, which allows comprehensive surgical, periodontal, restorative and preventive care while minimizing pain, stress and anxiety. Marinho and colleagues observed that comprehensive rehabilitation under general anesthesia can be delivered safely in both public and private settings and that most patients require several concurrent procedures because of accumulated pathology and prolonged delays in access [60,71]. Schulz-Weidner and colleagues showed that treatment in tertiary hospital settings is associated with very low rates of perioperative complications and supports interdisciplinary workflows among dentists, medical specialists, anesthesiologists, nursing staff and caregivers, which is decisive for medically compromised patients [33]. Comparative work further confirms that structured general-anesthesia pathways serve adults with intellectual disability and severe dental anxiety effectively [61].

Mobile dental units as a complementary model

While hospital dentistry handles the most complex cases, mobile dental units improve access for non-ambulatory people in residential facilities, long-term care settings or private homes by bringing services directly to patients and reducing transport-related delays [58]. These units typically provide examinations, preventive care, professional cleaning, periodontal maintenance, denture assessment, emergency treatment and oral health education [72]. Pradhan described an interdisciplinary mobile service in which general dentists, special care specialists, oral health therapists and dental prosthetists worked together across residential and home settings, demonstrating the feasibility of community-based delivery [62]. The model has inherent limits to its portability: patients requiring major surgery, advanced behavioral management or general anesthesia must still be referred to hospital services [60,62]. Mobile dentistry is therefore best viewed as one link in a stepped pathway and pairing it with remote consultation tools can strengthen continuity and coordination for vulnerable populations [73,74].

Teledentistry as a monitoring and triage tool

Teledentistry has become a practical way to extend oral health care to patients with SHCN who face physical, cognitive, behavioral or geographic barriers to attending a clinic. Digital platforms enable remote sharing of clinical data, allowing teams to screen, monitor conditions, provide preventive advice and assess urgency without an immediate in-person visit [75]. A major benefit is the ability to deliver professional assessment while bypassing transport and mobility burdens, which matters most for older, institutionalized and disabled patients who depend on others for travel. Beltran and colleagues showed that a geriatric teledentistry program in a rural Indigenous community mapped oral health needs, streamlined specialist review and reduced long-distance travel [66] and studies in long-term care report that patients and caregivers generally find remote support acceptable when standard access is limited [67]. Teledentistry also functions as a triage system: by reviewing photographs, videos, radiographs and histories, clinicians can identify who needs urgent in-person care while tracking less critical cases remotely, thereby allocating resources more efficiently. Evidence indicates reliable diagnostic accuracy across several dental fields when teledentistry is integrated into organized workflows [75] and image-based caries assessment can approach the accuracy of face-to-face examination under defined conditions, thereby supporting follow-up and preventive surveillance [68]. Limitations remain, including image quality, connectivity, patient cooperation, the availability of trained on-site assistance and concerns about privacy, liability and digital literacy; behavior, mood and compliance strongly shape how feasible a remote examination is for patients with special needs, so teledentistry is best used as a supportive element within a hybrid system rather than a replacement for clinical care [76].

Barriers to Multidisciplinary Implementation: Institutional, Economic and Training Gaps

Oral health care for patients with SHCN is constrained by institutional, financial and professional barriers. Despite improved guidelines and technology, structural weaknesses and poor integration across specialties continue to limit timely care and people with SHCN frequently rely on emergency rather than routine services due to organizational and financial barriers [70,57]. A primary institutional barrier is the persistent isolation of oral health from broader medical systems; fragmented structures restrict communication among dental teams, physicians, caregivers and allied professionals and although embedding oral health into

primary care and strengthening interdisciplinary teamwork are recognized as essential, such integrated models remain rare, especially in low-resource settings [34,72]. Economic obstacles further suppress utilization: treatment fees, travel costs and limited insurance place a heavy burden on families and these costs rise when patients need specialized equipment, longer appointments or advanced behavior management, so financial strain is consistently identified as a dominant predictor of low dental service use among people with disabilities [71,3]. The limited training of many clinicians compounds the problem, as minimal exposure to specialized care during education erodes confidence and willingness to treat complex patients; targeted education and practical workshops for staff and caregivers improve both outcomes and providers' willingness [70]. Physical accessibility adds another layer, because patients with severe mobility or cognitive impairment depend on caregivers to arrange transport and because standard clinics are rarely adapted to their needs, leaving utilization suboptimal and underscoring the need for sustained policy reform and investment [77].

A Proposed Integrated Care Algorithm: from Periodontal Assessment to Prosthetic Delivery

Comprehensive care for patients with SHCN and for those with complex systemic profiles or high social vulnerability, calls for a standardized pathway that aligns periodontal therapy, interdisciplinary decision-making and definitive rehabilitation in sequence. Fragmented care has proven inadequate for layered clinical needs, so a unified, patient-centered algorithm that embeds dental services within broader health networks is needed [72,74]. The pathway begins with a thorough periodontal diagnosis that establishes the degree of tissue destruction, the prognosis of remaining teeth and the viability of future restorations; in medically complex patients this must be paired with a functional, cognitive and medical assessment, since systemic comorbidity and psychomotor limitation directly shape the plan and direct communication channels between the dental clinic and the wider health network are indispensable [78]. The next stage is active interprofessional coordination, in which dental teams, general practitioners, nursing staff and social workers collaborate with caregivers to set realistic goals, supported by co-designed services and a central coordination hub [54]. For patients with intellectual or developmental disabilities, teledentistry and remote behavioral support can improve adaptability and compliance ahead of in-person visits, reducing clinical risk and reliance on sedation or general anesthesia [35]. Once the oral environment is stable, the restorative phase follows functional, biological and social principles and delivery of the final prosthesis marks not an endpoint but a transition into continuous maintenance and interdisciplinary surveillance [41]. Ultimately, the effectiveness of this algorithm depends on mature intersectoral integration and transdisciplinary training, because the historical separation of dentistry from public health continues to sustain access barriers; a framework built on coordination, teamwork and patient-centered workflows is the most viable route to better outcomes and fewer inequities [34,77].

Conclusion

Patients with Special Health Care Needs (SHCN) experience marked oral health disparities, including more prevalent and severe periodontal disease and greater difficulty with tooth loss and rehabilitation. These conditions stem from an interaction of systemic disease, behavioral and neuromuscular limitation, medication effects, sensory challenges and caregiver dependence, so conventional protocols are often insufficient. The main outcomes are as follows. Periodontal management depends on a preventive, individualized approach, in which early diagnosis, risk assessment, caregiver education, adapted hygiene and regular supportive therapy slow progression and preserve function. Periodontal stability should precede definitive prosthodontic rehabilitation, particularly after severe destruction or in high-susceptibility patients. Rehabilitation should be guided by realistic functional goals rather than prosthetic complexity: the choice among fixed, removable, implant-supported, overdenture and digital options must reflect medical status, hygiene capacity, behavioral tolerance, caregiver support and long-term prognosis. Often, the most successful rehabilitation is the one that can be tolerated, maintained and monitored over time, not the most sophisticated. Multidisciplinary collaboration with caregivers consistently improves planning, continuity and long-term results. Key gaps remain long-term outcome studies are scarce, standardized protocols are lacking and SHCN patients are underrepresented in research. In summary, individualized planning, preventive-centered care, caregiver engagement and interdisciplinary collaboration are the foundation for successful periodontal and prosthodontic care in SHCN patients, supporting better oral health, function and quality of life.

Conflict of Interest

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethical Statement

The project did not meet the definition of human subject research under the preview of the IRB according to federal regulations and therefore was exempt.

Informed Consent Statement

Not applicable.

Authors' Contributions

All authors contributed equally to this paper.

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