

Interdisciplinary Collaboration in Pediatric Dentistry: Challenges and Opportunities – A Narrative Review

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ABSTRACT

Objective: In navigating the landscape of pediatric dentistry, this review underscores the pivotal significance of interdisciplinary collaboration in ensuring comprehensive well-being for children. Despite challenges like communication barriers, the exploration of opportunities ranging from joint training programs to technological integration reveals promising avenues for improvement. Emphasising the imperative of collaboration for optimal pediatric care, the review advocates for sustained research, policy development, and initiatives to support a holistic approach, ultimately aiming to enhance overall health outcomes in this critical healthcare domain.

Key Words: Challenges, Dentistry, Interdisciplinary, Opportunities, Pediatrics

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INTRODUCTION

Pediatric dentistry plays a crucial role in promoting and maintaining the oral health of children from infancy through adolescence. Through the establishment of good oral hygiene habits and preventing dental issues, it contributes to overall well-being and quality of life. Children's oral health is linked to various aspects of their development, including speech, nutrition and social interactions.¹ Untreated dental problems in childhood can have long-term consequences, affecting not only the oral cavity but also impacting systemic health. Recognising the importance of early intervention and specialised care for children is fundamental to ensuring their overall health and a positive dental experience.²

Contemporary healthcare focuses on interdisciplinary collaboration as a means for comprehensive and patient-centric care. The understanding that health and well-being are multifaceted has established that no single discipline manages all aspects of a patient's needs.³ Interdisciplinary collaboration is particularly relevant in pediatric care, where the health of a child is influenced by a complex interplay between biological, social and psychological factors.

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This leads to a more holistic approach that addresses the broader spectrum of child's health.⁴

The review aims to shed light on the challenges encountered in the collaboration between pediatric dentistry and other healthcare disciplines. Understanding these challenges is essential for devising strategies to overcome them and for promoting effective teamwork. The review aims to provide insights that can guide policymakers, educators, and healthcare professionals in fostering a collaborative environment optimising patient outcomes. The ultimate goal is promoting a model of care that considers the unique needs of pediatric patient.

METHODS

A comprehensive search was executed in October 2023 across multiple electronic databases, including PubMed, SCOPUS, EMBASE, COCHRANE Library, and Science Direct. The search strategy employed MeSH terms and keywords as "Interdisciplinary," "Collaboration," "Pediatric Dentistry", "Challenges" and "Opportunities". Beyond electronic searches, additional relevant articles were identified through manual searches of cross-references and textbooks. The inclusion criteria were set to encompass articles published in English from November 2000 to October 2023 that aligned with the study's objectives. The process of article selection involved a thorough assessment of the inclusion and exclusion criteria, coupled with a quality evaluation of the studies. Initially, 345 articles were identified. After a preliminary review based on titles and abstracts, 67 articles were selected. Subsequent to a full-text evaluation, 21 articles were ultimately selected for inclusion in the review, fulfilling the study's specified criteria (Figure 1).

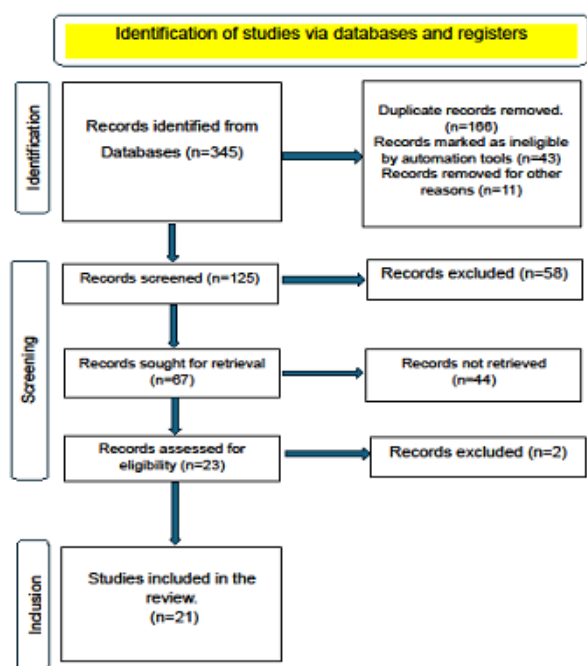


Figure No.1: Flowchart showing the step-by-step identification of the studies via databases

A brief overview of the selected articles included in this review is provided in Table 1.

Importance of Interdisciplinary Collaboration in Pediatric Dentistry
Holistic Patient Care

Addressing Oral Health in the Context of Overall Health: Pediatric patients often present with conditions that require collaboration between dental and medical professionals to ensure comprehensive understanding of their health status. Congenital disorders, developmental delays, or chronic illnesses may have oral manifestations that necessitate coordinated care. By

addressing oral health within the broader context of a child's well-being, interdisciplinary collaboration contributes to early detection and intervention, promoting optimal health outcomes.⁵

Impact of Oral Health on Systemic Health in Pediatric Patients: Research increasingly demonstrates the intricate relationship between oral health and systemic health, especially in pediatric populations. Conditions such as periodontal disease have been linked to systemic issues like diabetes, cardiovascular and respiratory problems. Collaborative efforts ensure the treatment of oral conditions considers their broader impact on child's health, promoting not only a healthy smile but also overall well-being.⁶

Comprehensive Treatment Planning
Integration of Dental and Medical Care: Interdisciplinary collaboration allows for the integration of dentistry with medical care in the treatment planning process. Pediatric patients often require care beyond traditional dental procedures. Children with complex medical histories or special healthcare needs benefit from collaborative efforts to create cohesive and patient-centered treatment plans.⁷ In pediatric dentistry this integration leads to early intervention and coordinated care significantly impacting a child's health trajectory.

Improved Outcomes for Pediatric Patients: Synergies between dental and medical expertise contribute to improved outcomes for pediatric patients. Collaborative treatment planning lead to better preventive measures, timely interventions, and overall enhanced patient care experiences. Leveraging the expertise of multiple healthcare professionals, pediatric dentistry can achieve more holistic and patient-focused outcomes as illustrated below (Figure 2), ultimately benefiting the well-being of the child.⁸

Table No.1: Overview of selected articles

Authors	Year/ Country	Area of interest	Conclusion
1.Ferraz NK et al. ²	2014/Brazil	Clinical outcomes of untreated caries in preschool children	Early intervention/specialized care fundamental for positive dental experience.
2.Taha A et al ³	2022/India	Interdisciplinary collaboration of Pediatricians & pedodontists for children's oral health	Emphasized position of pediatricians to deliver preventive oral care.
3.Cozza P et al ⁴	2007/Italy	Mouth breathing, atypical swallow and otitis media.	Demonstrated reduction in nasal resistance and improved cognitive hearing after treatment with Rapid Maxillary Expansion.
4.Jones ML et al ⁵	2012/USA	Interdisciplinary approach on pediatric feeding team for	Elaborated dental hygienist's role in interdisciplinary team.

		CWSHN	
5.Casamassimo PS et al ⁶	2000/USA	The relation between systemic and oral health.	Need for physicians to be competent to identify oral abnormalities of concern affecting health, growth and development of children.
6.Powell V et al ⁷	2012	Integration of Medical and Dental Care and Patient Data	Health information technology (HIT) aid isolated components of healthcare delivery to improve patient safety/quality of care.
7. Crall JJ. Et al ⁸	2005/USA	Development and integration of oral health services for preschool-age children	Early establishment of dental homes, risk assessment, integration of dental/medical care components.
8.Gauger TL et al ⁹	2018/USA	Integrative models between pediatric oral health and primary care providers	Collaboration offers varying services and levels of integration.
9.Winter J et al ¹⁰	2019/Germany	Interdisciplinary prevention model for Early Childhood Caries (ECC)	Interdisciplinary team involving gynecologists, midwives, pediatricians, dentists, social services and health office for ECC prevention.
10.Cote CJ et al ¹¹	2006/USA	Monitoring and management of pediatric patients during/after sedation	Standardizing treatment protocols essential from both dental and medical perspectives
11.Fisher-Owens et al ¹²	2007/USA	Conceptual model derived from population health and social epidemiology designed to analyze children's health.	Multilevel model correlating influence of individual, family and community on oral health outcomes.
12.Townsend et al ¹³	2017/USA	Interdisciplinary approach to prepare general dentists to manage dental trauma	Combined case discussions and hospital trauma call shadowing for dental trauma management training.
13.Edelstein B et al ¹⁵	2006 /USA	Policy implications of children presenting with dental emergencies to US Pediatric Dentistry programs	Demonstrated need for public policies to ensure timely, comprehensive dental care for vulnerable children.
14.Shah S. et al ¹⁶	2018/Pakistan	Pediatric dentistry- Novel evolvments	Dentist's collaboration with other specialists to deliver oral care customized to child's specific needs.
15.Van Malsen J et al ¹⁷	2017/Canada	Early establishment of Dental Homes (DH)	Substantiated the DH mode in improving children's oral health
16.Olson CA et al ¹⁸	2018/USA	Growth/Evolution of pediatric telehealth	Proposed databases to aid development/facilitation of multicenter studies to establish value of telehealth in pediatric care.
17.Vertel N et al ¹⁹	2017/Canada	Dental Services access for Children with Special Health Care Needs (CSHCN)	Importance of early referral to tertiary-care centres for CSHCN when beyond the skill/comfort level of dentist.
18.Olayiwola JN et al ²⁰	2014/USA	Care integration in Community Health Centers	Proposed practical guide for care integration, providing framework for strategy planning.

19.Hlongwa P et al ²¹	2021/South Africa	Inter-professional collaboration (IPC) for cleft lip/palate management.	Strategies for IPC among Cleft Lip/Palate teams for patient-centered approach.
20.Mikołajewska et al ²²	2013/Poland	Interdisciplinary Therapy in Cornelia-de-Lange Syndrome	Interdisciplinary approach to manage Cornelia-de-Lange Syndrome. Need for more clinical research/guidelines.
21.Clark M ²³	2017/USA	Interdisciplinary oral health education curriculum	Discussed Smiles for Life curriculum designed to educate healthcare providers about oral disease. Support integration of oral health and primary care.



Figure No.2: Interdisciplinary Pediatric Dentistry Framework



Figure No.3: Seven Steps of Interdisciplinary Treatment Approach

An interdisciplinary treatment approach requires discrete yet definite approach to achieve successful outcomes (Figure 3)

Challenges in Interdisciplinary Collaboration Communication Barriers

Between Dental and Medical Professionals: One significant challenge in interdisciplinary collaboration is communication barriers between dental and medical professionals. Differences in terminology, communication styles, and professional cultures can impede effective information exchange. This lack of seamless communication may lead to misunderstandings, treatment delays, or overlooking crucial aspects of a patient's health. Bridging this communication gap is essential for fostering a collaborative environment where information flows seamlessly, ensuring that all aspects of child's health, oral and systemic, are considered in the decision-making process.⁹

Amongst Interdisciplinary Team Members: Interdisciplinary care often involves professionals from various fields working together. However, effective collaboration requires effective communication amongst them. Coordinating efforts, sharing insights, and maintaining open lines of communication can be challenging, especially when team members come from diverse backgrounds with differing perspectives on patient care.¹⁰ Establishing clear communication channels and promoting a culture of collaborative openness are key strategies to address this challenge.

Lack of Standardized Protocols

Variation in Treatment Approaches: In pediatric dentistry, the lack of standardised protocols and variation in treatment approaches among professionals can hinder collaborative efforts. Differing training backgrounds /philosophies may lead to divergent approaches to similar cases, potentially causing confusion and inconsistency in patient care. Standardising treatment protocols is essential for creating a unified approach that considers the best practices from both dental and medical perspectives.¹¹ This enhances efficiency, reduce the risk of errors, and

contribute to a cohesive and streamlined patient care process.

Need for Cohesive Guidelines in Pediatric Dental Care
The absence of cohesive guidelines specifically tailored to interdisciplinary pediatric dental care contributes to the challenge of ensuring consistent and evidence-based practices. Developing and implementing comprehensive guidelines and establishing standardised protocols promote a shared understanding of best practices and facilitate smoother collaboration.¹²

Professional Silos

Limited Understanding of Each Discipline's Role: Professional silos, where individuals have limited understanding of roles and expertise of professionals from other disciplines, poses a significant challenge. This lack of awareness results in missed opportunities for collaboration and a fragmented approach to patient care.¹³ Educational initiatives and awareness campaigns that promote a better understanding of each discipline's contributions and capabilities help in fostering a collaborative mindset.

Overcoming Turf Issues for Effective Collaboration: Turf issues, such as professional territorialism or a reluctance to cede responsibilities, can hinder effective collaboration. Overcoming these challenges requires a cultural shift within healthcare settings, emphasising the shared goal of improving patient outcomes over individual professional interests.¹⁴ A collaborative culture involves fostering mutual respect, recognising the value of each discipline's expertise, and encouraging a team-based approach.

Opportunities for Interdisciplinary Collaboration Education and Training

Joint Training Programs for Dental and Medical Professionals: One significant opportunity for enhancing interdisciplinary collaboration lies in the development of joint training sessions. These programs facilitate a shared learning environment allowing professionals insights into each other's expertise, practices, and perspectives.

They can include interdisciplinary coursework, collaborative case studies, and shared clinical experiences, promoting a cohesive approach to patient care from both dental and medical perspective.¹⁵

Promoting Cross-disciplinary Understanding: Beyond formal education, ongoing initiatives can promote cross-disciplinary understanding. Workshops, seminars, and interdisciplinary conferences provide platforms for dental and medical professionals to engage in dialogue, share experiences, and develop a mutual appreciation for each other's roles.¹⁶

Integrated Patient Care Models

Establishing Pediatric Dental Homes: Pediatric dental homes provide a central hub for a child's oral health, where dental professionals coordinate and

integrate care with other healthcare providers. They provide a focal point for preventive care, early intervention, and ongoing management, with dentists collaborating closely with other specialists to address the unique healthcare requirements of pediatric patients.¹⁷

Coordinated Care Delivery through Collaborative Clinics: Collaborative clinics bring together dental and medical professionals in a shared physical space provide a practical opportunity for coordinated care delivery. By offering integrated services, joint consultations, shared treatment planning, and seamless referrals between dental/medical specialists, healthcare professionals enhance communication, streamline workflows improving the overall patient experience.¹¹

Technology Integration

Electronic Health Records for Seamless Information Sharing: Leveraging technology, particularly electronic health records (EHRs), offers a significant opportunity to overcome communication barriers and enhance information sharing. Integrated EHR systems allow dental and medical professionals to access and update patient information in real-time, ensuring all healthcare providers have a comprehensive view of a child's health history.¹⁸

Telehealth and Virtual Platforms for Interdisciplinary Consultations: The integration of telehealth and virtual platforms presents an innovative opportunity for interdisciplinary collaboration. These platforms enable remote consultations, collaborative case discussions, and real-time communication among healthcare professionals, regardless of their physical location.¹⁸ By embracing technology, professionals can overcome geographical barriers, improve accessibility to expertise, and foster interdisciplinary collaboration for routine/specialised care.

CASE STUDIES

Successful Examples of Interdisciplinary Collaboration in Pediatric Dentistry

Specific Programs or Initiatives

a. Children's Hospital Dental Center:

These are renowned for their commitment to providing an interdisciplinary approach to patient care, particularly for children with complex medical conditions or special needs. These centres understand the importance of collaboration between pediatric dentists, paediatricians, as well as other healthcare professionals, to ensure comprehensive and holistic care. Pediatric dentists work closely with paediatricians, nurses, speech therapists, nutritionists, and other specialists to develop a personalised care plan that considers the child's unique medical history and requirements. This collaborative approach ensures any potential interactions between dental treatments and the child's medical conditions or medications are carefully

considered. Additionally, the centres with specialised equipment and facilities, accommodate children with physical disabilities or sensory sensitivities, creating a welcoming and safe environment. They provide the highest quality of care, emphasising both oral health and overall well-being.¹⁹

b. Community Health Centers (CHC)

CHCs play a vital role in providing an interdisciplinary approach to patient care, serving individuals and families in underserved communities. These centres prioritise comprehensive healthcare by integrating medical and dental services under one roof. Patients, particularly children, benefit from this approach as they receive coordinated care to address not only immediate health concerns but also preventive measures and health education.²⁰ By offering a one-stop solution for medical/dental care, CHCs improve access to healthcare services, promote continuity of care, and enhance overall health outcomes for their patients, especially those facing socioeconomic disparities.

c. Collaborative Care for Cleft Lip/Palate Patients

In pediatric dentistry, the interdisciplinary approach to managing cleft lip/palate patients exemplifies collaborative care. Teams comprising pediatric dentists, surgeons, speech therapists, and orthodontists work together to ensure improved surgical, dental, and speech outcomes. This collaboration underscores the necessity of early intervention and continuous, integrated care strategies, tailored to each patient's unique needs.²¹

d. Interdisciplinary Approach for Children with Syndromes

Similarly, in treating children with syndromes such as Down's or Autism Spectrum Disorders, an interdisciplinary team approach is vital. This method not only addresses dental needs but also significantly impacts the overall development and quality of life of these children. This patient-centered, collaborative approach demonstrates the profound benefits of a holistic healthcare model.²²

Enhancing Pediatric Dental Care through Outcome Evaluation and Continuous Improvement

Evaluating Interdisciplinary Collaboration

Outcomes: Outcome evaluation is crucial in assessing the effectiveness of multidisciplinary collaboration in pediatric dental care. Key metrics include patient health outcomes, patient/family satisfaction, and efficiency of care delivery. These metrics, along with feedback from stakeholders, are essential in measuring the success and impact of collaborative efforts.²³

Continuous Improvement in Multidisciplinary Settings:

Continuous improvement is essential for the

advancement of pediatric dental care. Quality improvement initiatives stemming from outcome assessments such as new training programs, process optimisations, and technology integration enable dental care to evolve continually. This approach ensures that pediatric dentistry remains up-to-date with latest best practices and research, leading to enhanced care quality and better patient outcomes.⁸

Future Directions: Research is essential to comprehend the long-term impact of interdisciplinary pediatric dental care on both oral and systemic health outcomes. Knowledge gaps persist regarding the effectiveness of collaborative interventions and their influence on overall patient well-being. Further investigation is needed to identify best practices for communication within interdisciplinary teams and explore innovative technologies facilitating seamless communication and information sharing between dental and medical professionals. Closing these gaps is crucial for advancing evidence-based practices and optimising collaborative care in pediatric dentistry.

POLICY IMPLICATIONS

Advocacy for Integrated Healthcare Policies:

Promoting interdisciplinary collaboration in pediatric dentistry necessitates strategic policy advocacy and support initiatives. Firstly, policies should endorse and incentivise joint training programs, fostering a collaborative mindset from the early stages of education. This approach aims for a shared understanding and appreciation of each discipline's role. Additionally, supporting policies that recognise and integrate oral health into broader healthcare frameworks ensures that oral health is seamlessly woven into the overall fabric of healthcare delivery. Moreover, financial incentives for collaborative clinics are crucial, encouraging the establishment and maintenance of integrated dental and medical services. Furthermore, advocating for research initiatives examining the economic benefits of interdisciplinary collaboration in pediatric dentistry reinforces the importance of collaborative models in not only improving patient outcomes but also overall efficiency and cost-effectiveness of healthcare systems.

CONCLUSION

The review has identified challenges like communication barriers and lack of standardised protocols in interdisciplinary collaboration in pediatric dentistry, while emphasising opportunities in education, integrated care models, and technology. Stressing the vital role of collaboration in providing optimal care for pediatric patients, it calls for continued research, policy development, and initiatives to support interdisciplinary approaches. The potential benefits, including enhanced overall health outcomes in children, underscore the

urgency of prioritising and fostering interdisciplinary collaboration in pediatric dentistry.

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