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Oral Health Access and Quality of Life in Pediatric Cerebral Palsy: A Comprehensive Review

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ABSTRACT

Background: Children with cerebral palsy (CP) often face multiple barriers to accessing adequate oral healthcare due to physical, cognitive, and socioeconomic challenges. Poor oral health in this population significantly impacts nutrition, communication, self-esteem, and overall quality of life. **Objective:** This comprehensive review aims to evaluate existing literature on oral health status, accessibility to dental care, and the resulting impact on the quality of life in pediatric patients with cerebral palsy. **Methods:** A systematic search of peer-reviewed articles was conducted across databases including PubMed, Scopus, and Web of Science. Studies were selected based on relevance to oral health outcomes, access to care, caregiver perspectives, and quality of life assessments in children with CP. **Results:** The review reveals that children with CP have a higher prevalence of dental caries, gingivitis, and malocclusion compared to typically developing peers. Access to oral healthcare is limited due to inadequate provider training, transportation barriers, and lack of tailored services. Caregiver knowledge and socioeconomic status also play critical roles in determining oral health outcomes. Evidence suggests that improved oral care significantly enhances life quality by reducing pain, improving functional outcomes, and boosting psychosocial well-being. **Conclusion:** Enhancing oral health access for children with CP is essential to improving their overall quality of life. Strategies should include provider education, caregiver support, multidisciplinary collaboration, and health policy reforms to ensure inclusive and accessible dental care services.

KEYWORDS: Cerebral palsy, pediatric oral health, dental care access, quality of life, special needs dentistry, caregiver burden, health disparities, oral hygiene, multidisciplinary care.

INTRODUCTION

Cerebral palsy (CP) is the most common physical disability in childhood, characterized by permanent, non-progressive disorders of movement and posture attributed to disturbances in the developing fetal or infant brain [30]. The condition manifests with varying degrees of motor impairment, often classified by the Gross Motor Function Classification System (GMFCS) [29], and can be accompanied by associated impairments such as intellectual disability, communication disorders, epilepsy, and sensory deficits [17, 30]. These complex health needs extend to oral health, where children with CP often face a higher prevalence of dental caries, periodontal disease, and malocclusion compared to their typically developing peers [5, 9, 15].

The compromised oral health in children with CP is multifactorial, stemming from difficulties with oral hygiene due to motor limitations, involuntary movements, intellectual impairments, and swallowing difficulties [12, 15]. Furthermore, specific medications, diet modifications (e.g., frequent soft food intake), and gastroesophageal reflux are common issues that can exacerbate oral health problems [21]. Poor oral health can significantly impact a child's overall well-being, affecting their ability to eat, speak, and socialize, thereby diminishing their oral health-related quality of life (OHRQoL) [1, 6, 26]. OHRQoL encompasses the functional, psychological, social, and physical well-being as perceived by the individual or their caregivers, reflecting the impact of oral conditions on daily life [1, 6]. Studies consistently show that children with CP experience poorer OHRQoL compared to their healthy counterparts, with parents often reporting significant impacts on their child's and family's quality of life [1, 6, 25, 26, 34].

Despite the evident need, access to appropriate oral health care services for children with CP remains a significant challenge globally [2, 8, 12, 18]. Caregivers frequently encounter numerous barriers, including financial constraints, lack of specialized dental professionals, inadequate transportation, communication difficulties, and the child's behavioral challenges during dental visits [2, 8, 12, 19, 24, 27, 28, 33, 35]. These barriers can lead to delayed or foregone dental treatment, exacerbating existing oral health issues and further compromising OHRQoL [2, 12, 33]. Understanding the interplay between accessibility to oral health care services and OHRQoL among children with CP is crucial for developing targeted interventions and policies that can improve their overall health outcomes. This article aims to synthesize current knowledge regarding the accessibility challenges faced by children with CP in obtaining oral health care and the subsequent impact on their OHRQoL, drawing upon recent research in the field.

METHODS

This narrative review synthesizes findings from a comprehensive search of existing literature focusing on oral health care accessibility and oral health-related quality of life (OHRQoL) among children with cerebral palsy (CP). The methodology involved identifying relevant studies through a systematic approach, although it does not constitute a formal systematic review with meta-analysis.

Search Strategy: A broad search was conducted across various databases (e.g., PubMed, Scopus, Google Scholar) using keywords such as "cerebral palsy," "oral health," "dental care," "accessibility," "barriers," "quality of life," "OHRQoL," "children," and "pediatric." The search was limited to articles published primarily within the last decade to ensure currency, though seminal works were also included regardless of publication date.

Inclusion Criteria: Studies were included if they focused on children and adolescents (up to 18 years) with diagnosed CP, discussed aspects of oral health status, reported on access to oral health services, explored barriers or facilitators to care, or assessed OHRQoL using validated instruments. Both quantitative and qualitative studies were considered to capture a broad perspective on the topic. Studies specifically addressing the development and validation of relevant questionnaires were also included [3].

Data Extraction and Synthesis: Information extracted from the selected articles included study design, participant characteristics (e.g., age, GMFCS level, communication function classification system (CFCS) level), key findings related to oral health status (e.g., caries prevalence, periodontal disease), reported barriers to care, and OHRQoL outcomes (e.g., Parental-Caregivers Perceptions Questionnaire (P-CPQ), Family Impact Scale (FIS)) [1, 26, 36]. For studies on accessibility, specific categories of barriers (e.g., financial, transportation, professional expertise, behavioral) were noted [2, 4, 8, 12, 24, 27, 28, 33, 35]. For OHRQoL, the impact on physical, functional, emotional, and social well-being was considered [1, 6, 26]. The extracted data were then narratively synthesized to identify common themes, recurring challenges, and consistent findings across different geographical and socioeconomic contexts.

Conceptual Framework: The review implicitly operates within a socio-ecological model of health, recognizing that access to care and health outcomes are influenced by multiple levels, including individual factors (e.g., severity of CP), family factors (e.g., caregiver knowledge, socioeconomic status), healthcare system factors (e.g., availability of specialized services, policies), and broader societal factors (e.g., awareness, stigma) [4, 18].

RESULTS

The synthesis of the literature reveals consistent patterns regarding both the oral health status and the challenges in accessing care for children with cerebral palsy (CP), which collectively impact their oral health-related quality of life (OHRQoL).

Oral Health Status and OHRQoL:

Children and adolescents with CP consistently exhibit a higher prevalence of oral health issues. Dental caries is a significant concern, with studies reporting elevated caries experience compared to the general pediatric population [5, 9, 15]. Factors contributing to this include difficulties with oral hygiene due to motor impairments, prolonged use of soft diets, and medication-induced xerostomia [12, 15]. Periodontal disease and malocclusion are also commonly observed [9].

The impact of these oral health challenges on the OHRQoL of children with CP is substantial. Caregivers frequently report negative impacts on their child's functional well-being (e.g., difficulty eating, speaking), emotional well-being (e.g., pain, discomfort, embarrassment), and social well-being (e.g., avoidance of social interactions) [1, 6, 22, 26, 34]. For instance, a study in a low-resource setting found that children with CP experienced significant caries, which negatively correlated with their OHRQoL [6]. Another study highlighted that parents of children with CP perceived a poorer oral health status for their children, directly affecting their OHRQoL [22]. Comprehensive dental treatment, often requiring general anesthesia due to the child's complex needs, has been shown to significantly improve OHRQoL [13, 25, 32].

Barriers to Oral Health Care Accessibility:

Numerous barriers impede access to oral health care services for children with CP, as reported by caregivers and healthcare professionals across various settings [2, 8, 12, 24, 27, 33]. These barriers can be broadly categorized:

1. **Systemic and Structural Barriers:**
    - **Lack of Specialized Professionals:** A significant challenge is the scarcity of dental professionals adequately trained and equipped to treat children with special needs, including CP [8, 12, 27, 33]. Many general dental practitioners may lack the confidence or facilities to manage complex cases [8].
    - **Financial Constraints:** The economic burden of caring for a child with CP is substantial, and dental treatment costs often add to this strain, particularly in settings without comprehensive insurance or public funding [19, 24]. This can lead to delayed or foregone care [2, 12, 33].
    - **Inadequate Facilities:** Dental clinics may not be physically accessible for children using wheelchairs or other mobility aids, and specialized equipment for managing patients with involuntary movements or spasticity may be absent [12, 27].
    - **Long Waiting Lists:** Access to specialized services, particularly those requiring general anesthesia, often involves long waiting lists, delaying necessary interventions [12, 13].

2. **Geographical and Transportation Barriers:**
    - **Distance to Services:** Specialized dental clinics are often concentrated in urban centers, posing a significant challenge for families residing in rural or remote areas [14, 28, 35].
    - **Transportation Difficulties:** Caregivers frequently report difficulties with transportation, including the lack of suitable vehicles, high costs, and the physical demands of transporting a child with mobility impairments [2, 12, 28, 35].

3. **Caregiver-Related Barriers:**
    - **Lack of Awareness/Knowledge:** Some caregivers may not be fully aware of the importance of regular dental care for children with CP or the specific oral health risks associated with the condition [2, 12, 22].
    - **Caregiver Burden:** The immense physical, emotional, and financial demands of caring for a child with CP can lead to caregiver burnout, making it challenging to prioritize and arrange dental appointments [2, 19].
    - **Communication Challenges:** Caregivers may struggle to effectively communicate their child's needs or symptoms to dental professionals, especially if the child has severe communication impairments [17, 24].

4. **Child-Related Barriers:**
    - **Behavioral Challenges:** Children with CP, especially those with intellectual disabilities or sensory processing issues, may exhibit uncooperative behavior, anxiety, or fear during dental visits, making treatment difficult without sedation or general anesthesia [8, 12, 24, 32].
    - **Severity of Impairment:** The severity of CP, particularly higher GMFCS levels, has been correlated with increased barriers to healthcare access [11]. Children with more severe motor impairments often require more specialized care and face greater challenges in accessing it [12].

These interconnected barriers contribute to a cycle where poor access leads to untreated oral conditions, which in turn negatively impacts the OHRQoL of children with CP and their families.

DISCUSSION

The findings from this review underscore the critical need for improved oral health care access and support for children with cerebral palsy (CP) to enhance their oral health-related quality of life (OHRQoL). The higher prevalence of oral diseases such as dental caries and periodontal disease among children with CP is well-documented [5, 9, 15], attributed to a confluence of factors including motor dysfunction, feeding difficulties, specific medications, and challenges in maintaining oral hygiene [12, 15]. These oral health issues are not merely clinical observations but have profound implications for the child's daily life, affecting their ability to eat, communicate, and engage socially, as consistently reported by caregivers [1, 6, 22, 26, 34].

The pervasive barriers to accessing oral health care services for children with CP represent a significant public health concern. The shortage of dental professionals with specialized training in managing patients with special needs is a recurring theme [8, 12, 27, 33]. This highlights a systemic gap in dental education and professional development that needs urgent attention. Training programs should integrate comprehensive modules on managing patients with disabilities, including practical experience and interdisciplinary collaboration. Furthermore, the financial burden placed on families is immense [19, 24], suggesting a need for more robust public funding, subsidized dental programs, and insurance coverage tailored to the unique needs of children with chronic conditions.

Transportation difficulties and geographical disparities in service provision are also major impediments [14, 28, 35]. Solutions could include mobile dental units, tele-dentistry consultations for initial assessments and advice, and improved coordination with existing community-based rehabilitation (CBR) services [16]. The integration of oral health services within broader healthcare systems for children with CP, such as those provided by pediatricians or rehabilitation centers, could also streamline access and reduce the logistical burden on families [20].

Caregiver factors, including lack of awareness and the overwhelming burden of care, contribute to the challenges [2, 12, 19, 22]. Educational initiatives targeted at caregivers, providing practical guidance on oral hygiene techniques and emphasizing the importance of preventive dental visits, are crucial. Support groups and respite care services could also alleviate caregiver burden, indirectly improving their capacity to seek and facilitate dental care for their children. Addressing the child's behavioral challenges during dental visits, often linked to their cognitive or sensory impairments, necessitates a patient-centered approach, including desensitization techniques, behavioral management strategies, and, when necessary, the judicious use of sedation or general anesthesia in appropriately equipped facilities [8, 12, 32]. The improvement in OHRQoL observed after comprehensive dental treatment under general anesthesia further reinforces the importance of overcoming these access barriers [13, 25].

The severity of CP, as classified by GMFCS levels, has been linked to increased barriers to healthcare access [11]. This suggests that children with more severe impairments may require even more intensive and tailored support to ensure equitable access to oral health care. Future research should explore the specific needs of children across the spectrum of CP severity and develop differentiated strategies for care delivery.

Limitations and Future Directions:

This review is limited by its narrative nature, which does not allow for a quantitative synthesis of findings. The heterogeneity of study designs and outcome measures across the included literature also presents challenges for direct comparison. Future research should prioritize well-designed, longitudinal studies that track both accessibility and OHRQoL outcomes over time. There is also a need for intervention studies that evaluate the effectiveness of specific programs aimed at improving oral health care access for children with CP. The development and validation of standardized tools for assessing accessibility, such as the CP2OHS questionnaire [3], are vital for consistent data collection and cross-study comparisons. Furthermore, qualitative research exploring the lived experiences of caregivers and children with CP could provide deeper insights into the nuanced challenges and inform the development of more empathetic and effective care models [2, 33].

In conclusion, ensuring equitable access to comprehensive oral health care services for children with cerebral palsy is paramount for improving their OHRQoL and overall well-being. This requires a multi-pronged approach addressing systemic, geographical, caregiver-related, and child-specific barriers through policy changes, professional training, community-based interventions, and family support.

REFERENCES

1. Abanto J, Carvalho TS, Bönecker M, Ortega AO, Ciamponi AL, Raggio DP (2012). Parental reports of the oral health-related quality of life of children with cerebral palsy. BMC Oral Health, 12(1): 15. https://doi.org/10.1186/1472-6831-12-15
2. Abduludin DMA, Abd Rahman N, Mohd Adnan M, Yusuf A (2019). Experience of caregivers caring for children with cerebral palsy in accessing oral health care services: A qualitative study. Arch Orofac Sci, 14(2): 133–146. https://doi.org/10.21315/aos2019.14.2.381
3. Abduludin DMA, Abd Rahman N, Mohd Adnan M, Yusoff MSB (2021). Development and Validation of Questionnaire on Accessibility of Children with Cerebral Palsy to Oral Health Care Service (CP2OHS). DrDPH thesis. Universiti Sains Malaysia.
4. Adugna MB, Nabbouh F, Shehata S, Ghahari S (2020). Barriers and facilitators to healthcare access for children with disabilities in low and middle income sub-Saharan African countries: A scoping review. BMC Health Serv Res, 20(1): 15. https://doi.org/10.1186/s12913-019-4822-6
5. Akhter R, Hassan NM, Martin EF, Muhit M, Haque MR, Smithers-Sheedy H et al. (2017). Risk factors for dental caries among children with cerebral palsy in a low-resource setting. Dev Med Child Neurol, 59(5): 538–543. https://doi.org/10.1111/dmcn.13359
6. Akhter R, Hassan NM, Martin EF, Muhit M, Smithers-Sheedy H, Badawi N et al. (2019). Caries experience and oral health-related quality of life (OHRQoL) of children and adolescents with cerebral palsy in a low-resource setting. BMC Oral Health, 19(1): 15. https://doi.org/10.1186/s12903-018-0704-2
7. Arnold BF, Galiani S, Ram PK, Hubbard AE, Briceño B, Gertler PJ et al. (2013). Optimal recall period for caregiver-reported illness in risk factor and intervention

studies: A multicountry study. Am J Epidemiol, 177(4): 361–370. https://doi.org/10.1093/aje/kws281

8. Balkaran R, Esnard T, Perry M, Virtanen JI (2022). Challenges experienced in the dental care of persons with special needs: a qualitative study among health professionals and caregivers. BMC Oral Health, 22(1): 116. https://doi.org/10.1186/s12903-022-02153-8
9. Cardoso AM, Gomes LN, Silva CR, Soares Rde S, Abreu MH, Padilha WW et al. (2014). Dental caries and periodontal disease in Brazilian children and adolescents with cerebral palsy. Int J Environ Res Public Health, 12(1): 335–353. https://doi.org/10.3390/ijerph120100335
10. Choe R, Sim YF, Hong CHL, Mohideen S, Nadarajan R, Yap F et al. (2021). Internalizing problems are associated with in early childhood: Outcomes from an Asian multi-ethnic prospective birth cohort. PLoS ONE, 16(8): e0256163. https://doi.org/10.1371/journal.pone.0256163
11. Claus D, Tagawa A, Sarmiento C, Pan Z, Heyn P, Carollo J (2022). Correlation of Gross Motor Functional Classification System (GMFCS) level and encountering barriers to access healthcare. Arch Phys Med Rehabil, 103(12): e96. https://doi.org/10.1016/j.apmr.2022.08.683
12. da Silva-Selva ELMS, Filho PCL, de Macêdo TS, de Melo Freitas JL, de Aguiar CS, Vasconcelos MMVB et al. (2022). Oral health care of children and adolescents with different impairments of cerebral palsy: Barriers and challenges. Pesqui Bras Odontopediatria Clin Integr, 22: e210107. https://doi.org/10.1590/pboci.2022.033
13. Ezzeldin T, Bader R, Abougareeb H, Siddiqui IA, Al-Musa B, Alrashedi S et al. (2023). Oral health-related quality of life improvement in children with special needs following comprehensive dental treatment under GA: A Saudi-bsed follow-up study. J Clin Diagn Res, 17(3): 24-27. https://doi.org/10.7860/jcdr/2023/60819.17596
14. Goodridge D, Rogers M, Klassen L, Jeffery B, Knox K, Rohatinsky N et al. (2015). Access to health and support services: Perspectives of people living with a long-term traumatic spinal cord injury in rural and urban areas. Disabil Rehabil, 37(16): 1401–1410. https://doi.org/10.3109/09638288.2014.972593
15. Guerreiro GG, Malta CP, Marques CT, Martins JS, Bento LW (2021). Association between oral health status and type of motor function in children and adolescents with cerebral palsy. Res Soc Dev, 10(16): e06101622515. https://doi.org/10.33448/rsd-v10i16.22515
16. Hasan H, Al-Junid SM (2019). Experiences of parents and caregivers of children with disability on community-based rehabilitation (CBR) services in Malaysia: A qualitative study. Makara J Health Res, 23(3): 163–169. https://doi.org/10.7454/msk.v23i3.1144
17. Hidecker MJC, Paneth N, Rosenbaum PL, Kent RD, Lillie J, Eulenberg JB et al. (2011). Developing and validating the Communication Function Classification System for individuals with cerebral palsy. Dev Med Child Neurol, 53(8): 704–710. https://doi.org/10.1111/j.1469-8749.2011.03996.x
18. IOM (Institute of Medicine), NRC (National Research Council) (2011). Improving Access to Oral Health Care for Vulnerable and Underserved Populations. Washington, DC: The National Academies Press, pp. 229-253. https://doi.org/10.17226/13116
19. Ismail A, Abd Razak RS, Suddin LS, Mahmud A, Kamaralzaman, S, Yusri G (2022). The economic burden and determinant factors of parents/caregivers of children with cerebral palsy in Malaysia: A mixed methods study. Int J Environ Res Public Health, 19(1): 475. https://doi.org/10.3390/ijerph19010475
20. Johansen S, Andersen GL, Lydersen S, Kalleson R, Hollung SJ (2024). Use of primary health care services among children and adolescents with cerebral palsy. Dev Med Child Neurol, 66(9): 1234-1243. https://doi.org/10.1111/dmcn.15879
21. Leonard M, Dain E, Pelc K, Dan B, De Laet C (2020). Nutritional status of neurologically impaired children: Impact on comorbidity. Arch Pediatr, 27(2): 95–103. https://doi.org/10.1016/j.arcped.2019.11.003
22. Malta CP, Guerreiro GG, Dornelles NM, Marques CT, Martins JS, Bento LW (2020). Caregivers' perceptions regarding oral health status of children and adolescents with cerebral palsy. J Clin Pediatr Dent, 44(3): 161–167. https://doi.org/10.17796/1053-4625-44.3.5
23. Modlesky CM, Zhang C (2019). Muscle size, composition, and architecture in cerebral palsy. In: Miller F, Bachrach S, Lennon N, O'Neil M (eds.), Cerebral Palsy. Cham: Springer. https://doi.org/10.1007/978-3-319-50592-3_14-1
24. Mohd FN, Said AH, Ahmad MS, Ridzwan AN, Muhammad AI, Mat Naji AS (2023). Exploring the barriers and expectations towards health care services among parents/caretakers of people with intellectual disability in Kuantan, Malaysia: A qualitative study. J Int Soc Prev Community Dent, 13(6): 477–484. https://doi.org/10.4103/jispcd.JISPCD_89_23
25. Nasir SN, Mohd Noor SNF, Shahabudin S, Chong SE, Abdul Ghaffar Z (2021). Parental perspective regarding child oral health related quality of life after dental treatment under general anaesthesia. Malays J Med Health Sci, 17(9): 15-21.
26. Nqcobo C, Ralephenya T, Kolisa YM, Esan T, Yengopal V (2019). Caregivers' perceptions of the oral-health-

related quality of life of children with special needs in Johannesburg, South Africa. Health SA, 24: 1056. https://doi.org/10.4102/hsag.v24i0.1056

27. Oguntade HA, Nishath T, Owusu PG, Papadimitriou C, Sakyi KS (2022). Barriers to providing healthcare to children living with cerebral palsy in Ghana: A qualitative study of healthcare provider perspectives. PLOS Glob Public Health, 2(12): e0001331. https://doi.org/10.1371/journal.pgph.0001331
28. Oluyede L, Cochran AL, Prunkl L, Wang J, Wolfe M, McDonald NC (2022). Unpacking transportation barriers and facilitators to accessing health care: Interviews with care coordinators. Transp Res Interdisc Perspectives, 13: 100565. https://doi.org/10.1016/j.trip.2022.100565
29. Rethlefsen SA, Ryan DD, Kay RM (2010). Classification systems in cerebral palsy. Orthop Clin North Am, 41(4): 457–467. https://doi.org/10.1016/j.ocl.2010.06.005
30. Sadowska M, Sarecka-Hujar B, Kopyta I (2020). Cerebral palsy: Current opinions on definition, epidemiology, risk factors, classification and treatment options. Neuropsychiatr Dis Treat, 16: 1505-1518. http://doi.org/10.2147/NDT.S235165
31. Schober P, Boer C, Schwarte LA (2018). Correlation coefficients: Appropriate use and interpretation. Anesth Analg, 126(5): 1763–1768. https://doi.org/10.1213/ane.0000000000002864
32. Shetty A, Patil RB, Anand R, Sanghavi M, Nampalle A, Mudaliar A (2021). Managing a patient with cerebral palsy GMFCS grade V-full mouth rehabilitation under general anesthesia: A case report. NeuroQuantology 19(2): 131–136. https://doi.org/10.48047/nq.2021.19.2.NQ21027
33. Silva ELMSD, Góes PSA, Vasconcelos MMVB, Jamelli SR, Eickmann SH, Melo MMDC et al. (2020). Oral healthcare for children and adolescents with cerebral palsy: Perceptions of parents and caregivers. Cien Saude Colet, 25(10): 3773–3784. https://doi.org/10.1590/1413-812320202510.27972018
34. Sruthi KS, Yashoda R, Puranik MP (2021). Oral health status and parental perception of child oral health-related quality of life among children with cerebral palsy in Bangalore city: A cross-sectional study. Spec Care Dentist, 41(3): 340–348. https://doi.org/10.1111/scd.12568
35. Syed ST, Gerber BS, Sharp LK (2013). Traveling towards disease: Transportation barriers to health care access. J Community Health, 38(5): 976–993. https://doi.org/10.1007/s10900-013-9681-1
36. Thomson WM, Foster Page LA, Gaynor WN, Malden PE (2013). Short-form versions of the Parental-Caregivers Perceptions Questionnaire and the Family Impact Scale. Community Dent Oral Epidemiol, 41(5): 441–450. https://doi.org/10.1111/cdoe.12036