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MAIN COMPLICATIONS RELATED TO THE ORAL HEALTH OF CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY

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Abstract: Aim: To review the most common oral disorders in children and adolescents with cerebral palsy (CP). **Methods:** Bibliographic research was carried out using the PubMed and Scielo databases, using the descriptors “Oral Health” and “Cerebral Palsy”. Articles published in the last 10 years were included, with full and free text, in English and Portuguese, with an age range of birth to 18 years. **Results:** The studies indicated that the children and adolescents evaluated had high rates of caries, periodontal disease, malocclusion and bruxism, which can be explained by the lower motor condition of these individuals and by eating with a liquid or pasty consistency, which makes oral hygiene more difficult and leads to a greater accumulation of plaque in the oral cavity. There was also a higher prevalence of these disorders in patients with lower levels of education. **Conclusion:** Caries, periodontal disease, malocclusion and bruxism are the main complications related to the oral health of children and adolescents with CP. Therefore, greater attention needs to be paid to the oral health of these patients, as well as qualified professionals so that, with proper guidance and treatment, these patients can have a better quality of life. **Keywords:** “Oral Health”; “Cerebral Palsy”; “Children”

INTRODUCTION

Cerebral Palsy (CP) is a group of complex conditions caused by injury or non-progressive damage to the fetal or infant brain that is still developing. It is characterized by permanent neurological changes that alter the patient's posture, motor function and movement (MCINTYRE et al., 2022). These conditions cause activity limitations and are often accompanied by disturbances in sensation, perception, cognition, communication and behavior (GRAHAM et al., 2016).

The type and degree of impairment vary depending on the etiology of CP in each patient,

and can be of prenatal, perinatal or postnatal origin. Among the most common prenatal causes are congenital brain malformations, intrauterine infections, intrauterine stroke and chromosomal abnormalities. In the perinatal period, the main causative factors include hypoxic-ischemic insults, infections of the central nervous system (CNS), strokes and kernicterus. In the postnatal phase and during childhood, the recurring causes are trauma, CNS infections and strokes. In addition, prematurity, multiple gestation, intrauterine growth restriction, substance abuse maternal, pre-eclampsia, meconium aspiration, perinatal hypoglycemia and genetic susceptibility are risk factors frequently associated with CP (HALLMAN-COOPER and ROCHA CABRERO, 2025).

The prevalence of this neurological disorder varies according to the region analyzed, with the prevalence in low- and middle-income countries being 3.4 per 1,000 (95% CI 3.0-3.9) live births, while in high-income countries the prevalence is 1.6 per 1,000 (95% CI 1.5-1.7) live births. Thus, CP is the most common cause of neurological disability in children worldwide (MCINTYRE et al., 2022). Demographic factors such as schooling, marital status and maternal age may be associated with the difference in prevalence found globally (FORTHUN et al., 2018).

Cerebral palsy can be accompanied by various associated comorbidities, although these dysfunctions are not part of the core definition of CP. Patients can manifest various disorders such as epilepsy, urinary incontinence, intellectual disability, musculoskeletal disorders, respiratory dysfunction, sleep disorders, chronic pain, visual impairment, hearing impairment, difficulty chewing and swallowing (BRANDENBURG et al., 2019), in addition to the numerous pathologies that affect the oral cavity, significantly affecting the biopsychosocial life of children and adolescents (DIEGUEZ-PEREZ et al., 2016).

Injuries related to the oral cavity and oral health do not receive the necessary attention, both because of the lack of qualified professionals to deal with this demand and because of the delay in the appearance of the consequences caused by dental abnormalities (SILVA et al., 2020). Oral disorders are already a health problem, often latent, in people without any movement limitations and, when it comes to children and adolescents with cerebral palsy, this difficulty intensifies (JAN and JAN, 2016).

In this scenario, taking care of the dental health of these patients can be a challenge, since they have hypotonia of the face, often accompanied by rigidity and spasms, caused by poor motor selection, which results in excessive motor activity (GRAHAM et al., 2016) and makes it difficult to access the region to examine the oral cavity and perform proper hygiene. Other factors can also play a role in poor oral health, such as the type of food eaten, the length of time this food can remain in the oral cavity, the family's level of education, socioeconomic factors, family income and the patient's degree of dependence (LEMOES and KATZ, 2012).

Therefore, even though there are several studies on the comorbidities that affect children and adolescents with cerebral palsy, there are some dysfunctions that need more attention and investigation, such as those that affect oral and dental health. The aim of this study was to produce an integrative literature review on oral and dental disorders in children and adolescents with cerebral palsy, in order to understand the etiologies of each disorder and the management required for treatment and prevention.

MATERIAL AND METHOD

STUDY DESIGN AND RESEARCH QUESTION

This is an integrative review, which followed the following stages: identification of the topic and structuring of the research question; definition of the inclusion criteria; selection of articles in scientific databases; evaluation and analysis of the selected studies; interpretation of the results and presentation of the integrative review.

To structure the research question, we used the PICO strategy (acronym for population, intervention, comparison and outcomes) shown in Table 1, which led to the construction of the following guiding question: What are the main complications related to oral health that affect children and adolescents with cerebral palsy?

| | |
|-----------------------------|---|
| P - Population | Children and teenagers |
| I - Intervention/exhibition | Cerebral palsy |
| C- Comparator | Children and adolescents without cerebral palsy |
| O - Outcome | Main complications related to oral health |

Chart 1: Definition of terms for structuring the research question using the acronym PICO.

SEARCH STRATEGY

Initially, the Descriptors in Health Sciences (DeCS/MeSH) were consulted to find out the universal descriptors, as well as to identify synonyms and/or relevant alternative terms, and the following descriptors were selected: "Oral Health"; "Cerebral Palsy".

After selecting the search terms, the following search strategy was constructed using the Boolean operator "AND": "oral health AND cerebral palsy".

The Pubmed and Scielo databases were used for the search, and the following filters were applied to both databases: "In the last 10 years"; "free full text"; "English"; "Portuguese"; "Child: birth - 18 years".

The flowchart of the process of applying the search strategy and selecting the articles is shown in figure 1.

SELECTION CRITERIA

The review included cross-sectional studies, case-control studies and descriptive studies, and excluded literature reviews, case reports, duplicates in the databases, articles that did not have their full version available free of charge and articles that were not related to the topic. With regard to the study population, children and young people from birth to 18 years of age were considered.

Once the articles had been identified using the initial search strategy, the selection process was carried out by “7” independent evaluators in two phases. In the first phase, the articles were selected by reading the titles and abstracts. In the second phase, the articles were selected after reading the full texts to extract the data.

DATA EXTRACTION AND PRESENTATION OF RESULTS

Data extraction considered information on: author(s); sample characteristics; study design; characteristics of the intervention or exposure factor; characteristics of the comparator or control; and; statistical data for the outcome of interest for each exposure and control group.

Results were extracted for the main oral health problems. The results of the main oral health problems were presented as a percentage, mean, standard deviation, odds ratio and confidence interval . When available, the p-values associated with inferential statistics were presented, as well as the indication of the statistical test.

RESULTS

The results in Table 2 show that the most frequent oral health complications in the patients analyzed are caries, periodontal disease, bruxism and malocclusion. In addition, other less frequent complications are also present in the studies, such as mouth breathing, tongue thrust, oral hygiene, initial pH, infection, salivary flow rate, sialorrhea and others. One of the articles provides data on trauma, in which the majority of children with traumatic dental injuries (TDIs) did not undergo treatment after the trauma. Children with cerebral palsy were 3.18 times more likely to have a TDI than children with autism (BASHA et al., 2021).

In a recent study published in 2024, children with cerebral palsy showed a higher prevalence of malocclusion compared to healthy children, as well as problems with mouth breathing and tongue thrust, which may be associated and justify the malocclusion data (ALMOTAREB and AL-SHAMAHY, 2024). The patients observed in the study by (COSTA et al., 2021) also had a high prevalence rate of malocclusion, most of which was class I, as well as a high rate of gingivitis, most of which was considered mild, and stage I grade A periodontitis. Another relevant finding is that the majority of children with CP had regular oral hygiene.

(KACHWINYA et al., 2022) reports that gingival bleeding was present in all dentitions, with a higher prevalence in the permanent dentition when compared to the mixed and primary dentitions. In addition, (AKHTER et al., 2019) states that caries was the disease with the highest prevalence in the population studied, and (KACHWINYA et al., 2022) analyzing the relationship between age and caries, concludes that the youngest children (< 6 years) had the highest CEO-D value, while children aged 6 to 12 had the lowest value. This study also reports a low prevalence of dental erosion and dental trauma, while excessive salivation and dental wear due to bruxism were considered high.

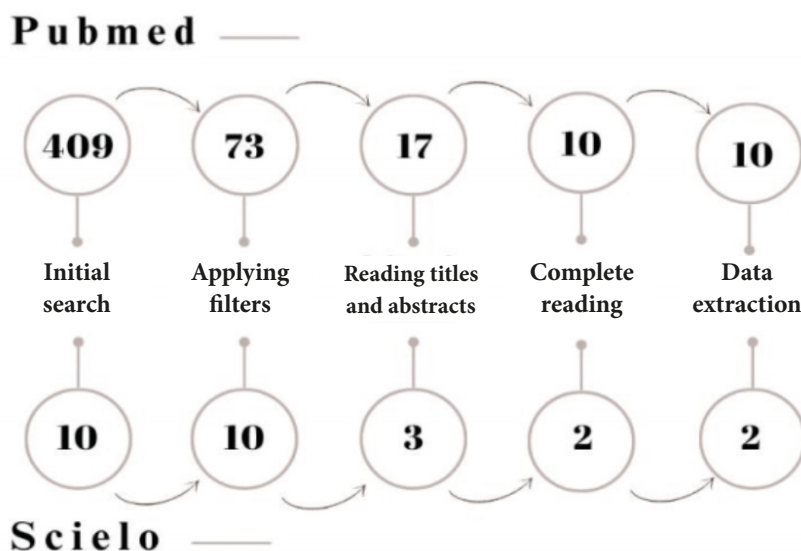


Figure 1: Flowchart of the application of the search strategy and selection process.

Similarly, (QURITUM et al., 2022) and (ORSÓS et al., 2021), analyze that the caries rate in younger children is higher when compared to children with permanent dentition. (ORSÓS et al., 2021), adds that it was also higher in groups II and III of the GMFCS classification. The proportion of PC/healthy children with caries who never received restorative dental treatment was higher in younger children with primary dentition than in older children with permanent dentition. (QURITUM et al., 2022) adds that the prevalence of poor oral hygiene, initial pH and Streptococcus mutans cases is higher in cases when compared to controls, while the unstimulated salivary flow rate, buffer capacity and salivary TAC were significantly lower in cases.

For (LEMONS and KATZ, 2012), the prevalence of caries was higher in the deciduous dentition when compared to the permanent dentition. (AKHTER et al., 2017) in which the results showed that the proportion of caries experience is higher in children aged 7 to 11 years when compared to the groups aged 2 to 6 years and 12 to 17 years. In the study by (GUERREIRO and GARCÍAS, 2009), the children examined had high rates of gingival alteration (including the presence of dental calculus and

gingival bleeding) and caries experience, especially in the deciduous dentition, as well as a high rate of moderate and severe malocclusion. Still in the area of caries, (CARDOSO et al., 2014) states that the rate of dental caries was high, especially the presence of untreated dental caries. In addition, in the periodontal assessment, the majority of the sample showed alterations. The average GBI was 22.44% and in the CPI examination, the prevalence of gingival bleeding and calculus was high, while the prevalence of shallow and deep pockets was lower.

The most frequent habit in the group with CP is mouth breathing, followed by salivation and the grinding and chewing of objects. The least frequent habit is lip biting or sucking. As for disorders, in the group with CP, the most frequent was halitosis, followed by bleeding gums. The least frequent disorders were enamel agenesis and hypoplasia, but they were still present (PEINADO et al., 2018). Finally, according to (GUERREIRO and GARCÍAS, 2009) the children examined had high rates of gingival alteration (including the presence of dental calculus and gingival bleeding) and caries experience, especially in the deciduous dentition, as well as a high rate of moderate and severe malocclusion.

| Author (citation) | Sample | Study design | Intervention or exhibition | Comparator | Results |
|-----------------------------------|--|-----------------------|----------------------------|--|---|
| (ALMO-TAREB and AL-SHAMAHY, 2024) | 120 children 6-13 years old | Case-control study | No | Cases: 60 children with CP Controls: 60 healthy children | Malocclusion-Classification (Cases): 50% Class I; 46.7% Class II; 3.3% Class III Malocclusion-Classification (Controls): 71.7% Class I; 20% Class II; 8.3% Class III Malocclusion-Types: - 3.3% anterior crossbite - 20% protrusion of front teeth - 33.3% anterior open bite - 16.7% deep bite Mouth breathing: 60% Cases; 11.7% Controls Tongue thrust: 36.7% Cases; 5% Controls |
| (KA-CHWINYA et al., 2022) | 90 children with CP 3-17 years old | Cross-sectional study | No | No | Plate score: Mean \pm SD = 1.9 ± 0.74 44.4% with bleeding gums Gingival bleeding according to dental status: 77% permanent; 70% mixed; 16% primary Tooth erosion: 14.4% Dental trauma: 12.2% Baba: 70% Tooth wear (Bruxism): 52% Dental caries: 63.3% CPOD= 3.8 ± 4.5 |
| (QURITUM et al., 2022) | 160 children 3-11 years old | Case-control study | No | Cases:80 children with CP Controls: 80 healthy children | IHO-S: Cases= 2.14 ± 0.68 Controls= 1.32 ± 0.56 CEO-D: Cases= 6.86 ± 7.11 Controls= 5.16 ± 5.21 Compared to controls, the cases have significantly: - More decayed primary teeth (6.44 ± 6.64) - Fewer primary teeth missing (0.28 ± 0.67) and filled (0.14 ± 0.47) Salivary parameters: <u>Unstimulated salivary flow rate:</u> Cases= 0.34 ± 0.12 ; Controls= 0.54 ± 0.18 <u>Initial pH:</u> Cases= 7.05 ± 0.53 ; Controls= 7.63 ± 0.44 <u>Buffer capacity:</u> Cases= 0.62 ± 0.16 ; Controls= 0.75 ± 0.17 <u>Salivary CT scan:</u> Cases= 2.65 ± 1.10 ; Controls= 3.29 ± 1.05 <u>Streptococcus mutans log:</u> Cases= 6.75 ± 0.25 ; Controls= 6.63 ± 0.23 |
| (ORSÓS et al., 2021) | 199 children Age (mean \pm SD)= 9.06 ± 3.69 years | Descriptive study | No | Seven groups (G): G0(n=50): healthy children in a normal educational method G1 (n=19): normal motor function in conductive education G2 (n=34): GMFCS I G3 (n=19): GMFCS II G4 (n=29): GMFCS III G5 (n=30): GMFCS IV G6(n=18): GMFCS V | n= 199 - df-t (mean)= 1.87 - DMF-T (average)= 1.15 - Restoration rate (deciduous) = 18.12% - Restoration rate (permanent dentition) = 27% Worst groups: <u>G3-GMFCS II (n=19)</u> - df-t (average)= 3.0 - DMF-T (average)= 2.0 <u>G4-GMFCS III (n=29)</u> - df-t (mean)= 2.42 - DMF-T (average)= 1.68 |

| | | | | | |
|------------------------|---|-----------------------|--------|--------|---|
| (COSTA et al., 2021) | 33 students with severe neurological impairment (n=19 CP) Age (mean± SD): 13.3 ± 4.9 years | Cross-sectional study | No | No | Malocclusion: 51.6% - Class I malocclusion: 43.8% - Class II malocclusion: 18.8% - Class III malocclusion: 37.5% IHO-S (mean ± SD): 2.06 ± 1.17 Oral hygiene - Good: 16.1%; Fair: 64.5%; Poor: 19.3% Gingivitis: 83.9% - Light: 61.5% - Moderate: 23.1% - Advanced: 15.4% Periodontitis (Stage I Grade A): 22.6% |
| (BASHA et al., 2021) | 350 children with special needs Median age (interquartile range): 12 (2) years old | Cross-sectional study | No | No | Traumatic dental injuries (TDI) in children with CP: 47,5% (n=19) Children with CP were 3.18 times (CI: 1.89-11.32, $P = 0.024$) more likely to have a TDI than children with autism. |
| (AKHTER et al., 2019) | A total of 90 children and adolescents with CP, aged 2 to 17 (average age 10 years; 37.8% female and 62.2% male). | Cross-sectional study | No | No | Total number of children and adolescents with CP (n = 90): With caries present, $n = 47$ (%) |
| (PEINADO et al., 2018) | 28 patients of both sexes, aged between 10 and 20 years. | Cross-sectional study | No | No | Patients with CP: -Dental trauma: 50% -Mouth breathing: 69.2% -Sialorrhea: 46.2% -Halitosis: 46.2% -Gingival bleeding: 38.5% -Agenesis and enamel hypoplasia: 8.3% |
| (AKHTER et al., 2017) | 90 children with CP aged 2 to 17; both sexes | Cross-sectional study | No | No | Caries present, $n=47$ (%) 2-6 years: 7 (35.0) 7-11 years: 26 (70.3) 12-17 years: 14 (42.4) |
| (CARDOSO et al., 2014) | 80 children and adolescents with CP between the ages of 2 and 18; both sexes | Cross-sectional study | No | No | Prevalence of dental caries: 59.3% Mean and standard deviation - DMFT ($n = 65$): $1,71 \pm 2,42$ - ceo-d ($n = 46$): $2,22 \pm 3,23$ Presence of periodontal changes, $n=79$ (%) : 71 (89.9) Average GBI: 22.44% CPI (prevalence): - Bleeding gums: 94.73% - Calculation: 79.62% - Shallow pockets: 12.90% - Deep pockets: 3.22% |
| (LEMOS and KATZ, 2012) | | Cross-sectional study | Absent | Absent | Prevalence of caries in deciduous teeth: 61.1% <u>Average and standard deviation:</u> - dmft: 3.77 ± 4.58 Prevalence of caries in the permanent dentition: 26.3% <u>Average and standard deviation:</u> - CPO-D: 0.85 ± 1.64 |

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|--------------------------------|--|-----------------------|--------|--------|---|
| (GUER-REIRO and GARCÍAS, 2009) | | Cross-sectional study | Absent | Absent | Moderate and severe dental malocclusion: Periodontal alterations Gingival alteration: 68.3% CPI - Dental calculus: 50% - Bleeding gums: 43.8% Presence of caries: 58.5% - Average DMFT: 0.3 - average dmfs: 3.6 |
|--------------------------------|--|-----------------------|--------|--------|---|

Chart 2: Results of data extraction from the selected articles after reading the full text.

Note: CEO-D: decayed, extracted and restored teeth; CPOD: caries, tooth loss and filling index; df-t: decayed and filled teeth index for deciduous teeth; DMF-T: sum of the number of decayed, lost due to caries and filled teeth in permanent teeth; SD: standard deviation; GMFCS: Gross Motor Function Classification System; IGB: Gingival Bleeding Index; IHO-S: Simplified Oral Hygiene Index; CPI: Community Periodontal Index; CP: Cerebral Palsy; Salivary TAC: Total antioxidant capacity of saliva.

DISCUSSION

The oral health problems found in children and adolescents are the same as those identified in the population free of any neurological disability. However, children and adolescents with CP have these conditions to a greater extent than the general population, especially in situations where the research samples have less access to information and resources for specialized dental treatment. Even so, regardless of age or gender, the pediatric population with CP is more susceptible to dental caries, bruxism, periodontal disease and malocclusion when compared to other conditions.

In the context of the caries experience, people with CP generally combine determining factors that explain these oral conditions, such as poor oral hygiene, due to motor difficulties culminating in poor brushing; drug therapy, which can promote changes in salivary flow; facial muscle tone, which leads to changes in pH and oral microbiota due to mouth breathing; consistency and type of food, which influence the accumulation of bacterial plaque; and the socioeconomic conditions of family members or caregivers, which may reflect poor access to information and specialized dental care (CARDOSO et al., 2014).

Children with CP have a higher rate of caries in deciduous teeth than in permanent teeth, when compared to children without neurological impairment, (QURITUM et al.,

2022) corroborating (LEMOS and KATZ, 2012), which points to a higher prevalence of caries in the deciduous dentition while in the permanent dentition it is lower. Both articles support the fact that the permanent dentition has a lower rate of caries due to the smaller number of permanent teeth present in the oral cavity of those with CP. This is due to the delayed eruption or deficiency in the formation of permanent teeth, due to a pasty and liquid diet which often accompanies a nutritional deficiency that can be related to general growth retardation. In addition, the fact that the permanent teeth appear in the mouth years after the primary dentition, may also be a decisive factor in the research, since they are exposed to a potentially cariogenic environment for less time than the teeth that erupted first in the oral cavity.

On the other hand, the number of restorations present in deciduous teeth is lower than those found in permanent teeth, but this difference can be confirmed by the fact that around half of the children taking part in this study are in the mixed dentition stage, so that the number of permanent and deciduous teeth present in the oral cavity varies according to the age of the individual. Therefore, the younger the age, the greater the number of deciduous teeth, and the older the child, the presence of permanent teeth in the mouth tends to be physiologically greater (ORSÓS et al., 2021).

Other factors also determine whether patients with CP have a higher rate of caries, gingivitis and periodontal disease. Motor difficulties can prevent the patient from carrying out proper and efficient oral hygiene, as well as exacerbating the carer's difficulties, since, according to (CARDOSO et al., 2014), patients with CP generally have spasms in their chewing muscles and involuntary body movements, conditions that directly affect the quality of oral hygiene. The diet of children and adolescents also contributes to the development of poor oral health adjacent to CP. Because this food is usually of a liquid or pasty consistency, there is a greater accumulation of bacterial plaque in the oral cavity. Due to their consistency, these foods are more easily retained, impairing the mouth's self-cleaning capacity due to the loss of saliva's ability to maintain a constant pH level. This damage can be caused both by mouth breathing, which according to the study by (ALMOTAREB and AL-SHAMAHY, 2024) and (PEINADO et al., 2018) is present in more than half of children with CP, and by the low hydration levels of these patients (AKHTER et al., 2019)

The prevalence of mouth breathing differs when comparing different studies. (ALMOTAREB and AL-SHAMAHY, 2024) shows a lower prevalence than the study conducted by (PEINADO et al., 2018), however this result may be related to the sample of the second study which analyzed only 28 children compared to 120 children analyzed in the first article. Reduced salivary flow in children with CP can also be associated with mouth breathing and poor hydration, since they depend entirely on their guardians to provide this hydration, which is not always adequate (QURITUM et al., 2022).

Malocclusion, on the other hand, occurs mainly due to a breakdown in the muscular balance of the face as a result of mouth breathing, tongue interposition, motor dysfunc-

tions and low muscle tone. In addition, the high incidence of tooth decay in early childhood impairs the eruption of permanent teeth, which contributes to the development of malocclusion since the teeth, when present, are generally in incorrect positions and can alter the physiological position of the teeth in the dental arch (MCINTYRE et al., 2022).

Gingivitis, an inflammation of the gums with bleeding, can develop into periodontitis which, when severe, can cause significant bone loss, indicating that not only the teeth are involved in this condition, but also the supporting tissues of the oral cavity such as the gums, the periodontal ligament and the alveolar bone. Due to the intense accumulation of biofilm on the tooth surface as a result of poor hygiene, pasty food, reduced salivary flow and poor positioning of the teeth, there is a recurrence of significant damage to the health of the supporting tissues. It is clear that gingival bleeding occurs in almost half of the sample and the portion in which bleeding was observed was present in all three types of dentition, being greater in patients with permanent dentition (KACHWINYA et al., 2022). On the other hand, patients aged between 10 and 20 had less gingival bleeding when compared to the group aged between 2 and 18 (CARDOSO et al., 2014). Although the studies differ in terms of the percentage of results, it can be seen that (CARDOSO et al., 2014) presents the most careful method of analyzing periodontal conditions, involving a theoretical stage and a clinical stage with a dental surgeon specialized in paediatric dentistry.

This integrative review sought to list the most common oral disorders in the pediatric population with cerebral palsy, in order to draw the attention of health professionals such as general practitioners, neurologists, nutritionists, physiotherapists and dental surgeons to an under-served minority of significant disorders that affect the patient's health

and well-being. This study has some limitations, such as the wide differences between the samples in terms of geographical location, age, gender and socio-economic conditions, which makes comparisons between studies more difficult. The limited number of studies also interferes with a more robust search for the subject, since there are few details on the involvement of each oral disease and how it affects the body of children and adolescents with CP.

Therefore, it is suggested that this area of study be expanded, especially in relation to malocclusions, which are directly related to muscle tone, as well as specialized training in the curriculum of general dental surgeons in Brazil so that there is better guidance for assisting caregivers of children and adolescents with CP, both in school clinics and in the exercise of the profession, whether in public or private service. The relationship between orofacial deformities and the type of musculature often found in children with cerebral palsy could also be explored, a topic that was not covered in this review.

CONCLUSION

Children and adolescents with cerebral palsy are at greater risk of oral diseases such as caries, periodontal disease, bruxism and malocclusions compared to individuals who do not have these dysfunctions. This is mainly because they find it more difficult to maintain effective oral hygiene practices, as well as having poor lip and tongue control and being more likely to be mouth breathers, with malocclusion and dental trauma.

This review compiled various relevant data from the current literature and provided the integration of results, as well as their analysis, in order to draw attention to a problem that, although it occurs, is often not noticed and therefore not treated. The aim is to disseminate information about oral health problems in patients with cerebral palsy in order to better prepare and update dental professionals and the community to deal with the oral health of children and young people with CP, since specialized treatment can guarantee better care for patients with this disability.

In this scenario, greater attention needs to be paid to dental care for these patients, since the general health of children with CP can be improved with early intervention and qualified professionals, in order to prevent and reduce the severity of associated factors, giving individuals a better quality of life.

REFERENCES

- AKHTER, Rahena e colab. 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*, v. 19, n. 1, p. 15, 15 Dez 2019.
- AKHTER, Rahena e colab. **Risk factors for dental caries among children with cerebral palsy in a low-resource setting.** *Developmental Medicine & Child Neurology*, v. 59, n. 5, p. 538–543, 9 Maio 2017.
- ALMOTAREB, Fuad Lutf e AL-SHAMAHY, Hassan Abdulwahab. **Comparison of the prevalence of malocclusion and oral habits between children with cerebral palsy and healthy children.** *BMC Oral Health*, v. 24, n. 1, p. 72, 11 Jan 2024.
- BASHA, Sakeenabi e colab. **Traumatic dental injuries in special health care needs children and association with obesity.** *Annals of Saudi Medicine*, v. 41, n. 1, p. 51–58, Jan 2021.
- BRANDENBURG, Joline E. e FOGARTY, Matthew J. e SIECK, Gary C. **A Critical Evaluation of Current Concepts in Cerebral Palsy.** *Physiology*, v. 34, n. 3, p. 216–229, 1 Maio 2019.

CARDOSO, Andreia e colab. **Dental Caries and Periodontal Disease in Brazilian Children and Adolescents with Cerebral Palsy**. International Journal of Environmental Research and Public Health, v. 12, n. 1, p. 335–353, 29 Dez 2014.

COSTA, Alicia e colab. **Assessment of Swallowing Disorders, Nutritional and Hydration Status, and Oral Hygiene in Students with Severe Neurological Disabilities Including Cerebral Palsy**. Nutrients, v. 13, n. 7, p. 2413, 14 Jul 2021.

DIEGUEZ-PEREZ, M e colab. **Oral health in children with physical (Cerebral Palsy) and intellectual (Down Syndrome) disabilities: Systematic review I**. Journal of Clinical and Experimental Dentistry, p. 0–0, 2016.

FORTHUN, Ingeborg e colab. **Parental socioeconomic status and risk of cerebral palsy in the child: evidence from two Nordic population-based cohorts**. International Journal of Epidemiology, v. 47, n. 4, p. 1298–1306, 1 Ago 2018.

GRAHAM, H. Kerr e colab. **Cerebral palsy**. Nature Reviews Disease Primers, v. 2, n. 1, p. 15082, 7 Jan 2016.

GUERREIRO, Patrícia Osório e GARCIAS, Gilberto de Lima. **Diagnóstico das condições de saúde bucal em portadores de paralisia cerebral do município de Pelotas, Rio Grande do Sul, Brasil**. Ciência & Saúde Coletiva, v. 14, n. 5, p. 1939–1946, Dez 2009.

HALLMAN-COOPER, Jamika L. e ROCHA CABRERO, Franklyn. **Cerebral Palsy**. [S.l: s.n.], 2025.

JAN, Basil M. e JAN, Mohammed M. **Dental health of children with cerebral palsy**. Neurosciences, v. 21, n. 4, p. 314–318, 31 Out 2016.

KACHWINYA, S. M. e colab. **Oral health status and barriers to oral healthcare among children with cerebral palsy attending a health care center in Kampala, Uganda**. BMC Oral Health, v. 22, n. 1, p. 656, 30 Dez 2022.

LEMOS, Ana Carolina Oliveira e KATZ, Cintia Regina Tornisiello. **Condições de saúde bucal e acesso ao tratamento odontológico de pacientes com paralisia cerebral atendidos em um centro de referência do Nordeste - Brasil**. Revista CEFAC, v. 14, n. 5, p. 861–871, 5 Jun 2012a.

LEMOS, Ana Carolina Oliveira e KATZ, Cintia Regina Tornisiello. **Condições de saúde bucal e acesso ao tratamento odontológico de pacientes com paralisia cerebral atendidos em um centro de referência do Nordeste - Brasil**. Revista CEFAC, v. 14, n. 5, p. 861–871, 5 Jun 2012b.

MCINTYRE, Sarah e colab. **Global prevalence of cerebral palsy: A systematic analysis**. Developmental Medicine & Child Neurology, v. 64, n. 12, p. 1494–1506, 11 Dez 2022.

ORSÓS, M e colab. **Oral Health, Dental Care and Nutritional Habits of Children with Cerebral Palsy during Conductive Education**. Journal of Clinical Pediatric Dentistry, v. 45, n. 4, p. 239–246, 1 Out 2021.

PEINADO, N. Rodríguez e colab. **A study of the dental treatment needs of special patients: cerebral paralysis and Down syndrome**. European Journal of Paediatric Dentistry, v. 19, n. 3, p. 233–238, 2018.

QURITUM, Sara M. e colab. **Evaluation of salivary parameters and Streptococcus' Mutans count in children with cerebral palsy in Egypt: a case control study**. BMC Oral Health, v. 22, n. 1, p. 411, 19 Set 2022.

SILVA, Elizabeth Louisy Marques Soares Da e colab. **Cuidados em saúde bucal a crianças e adolescentes com paralisia cerebral: percepção de pais e cuidadores**. Ciência & Saúde Coletiva, v. 25, n. 10, p. 3773–3784, Out 2020.