EDITORIAL



Current reviews in pediatric dentistry

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Oral diseases in children represent one of the most relevant public health issues [1]. Despite the increasing prevention performed in recent years, a relevant severity results if preventive and treatment measures are not taken at the correct time [2]. Oral health in early life is a good predictor of oral health status in adolescence, adulthood and the elderly [3, 4]. Accordingly, pediatric dentists are capable of identifying the presence of unhealthy habits or conditions in children from the earliest years of life and inform parents and family members of the resulting risks [5, 6]. In case preventive measures are not properly taken, the result can consist of the arise of specific problems such as dental caries, erosive tooth wear (ETW), hypomineralization and malocclusion, which have a negative impact in adult life [7]. Nowadays pediatric dentistry offers many possibilities to prevent such oral health problems. When these fail, minimally invasive approaches and innovative restorative materials are now available to dentists to treat such conditions [8].

Considering the increase of evidence of this field and the recent innovations introduced, literature reviews have a pivotal role for clinicians to guide their clinical practice. From simple narrative reviews to meta-analyses, reviews give a comprehensive idea of a single topic, thus allowing both clinicians and scientists to answer their questions and address their work. In 2023, the Journal of Clinical Pediatric Dentistry (JOCPD) has collected many literature reviews dealing with different aspects of pediatric dentistry. One of the widest fields of research is represented by dental caries, considering the high incidence of this pathology especially in pediatric subjects [1]. A scoping review was focused on the association between early childhood caries and the nutritional status (contribution 1). Based on the association of dental caries with other medical issues, a systematic review and meta-analysis was conducted to evaluate the potential role exerted by dental caries on the development of asthma (contribution 2).

In recent years, a trend topic in pediatric dentistry is molar incisor hypomineralization, a characteristic condition affecting the enamel mineralization of at least incisors and molars; accordingly, a scoping review collected in the present Special Issue was focused on this topic (contribution 3).

Considering the preventive and therapeutic strategies towards dental caries, other reviews collected have respectively explored the economic evaluation of fluoride varnishes and pit and fissure sealants in preventing dental caries (contribution 4), the effects of probiotics on preventing caries in preschool children (contribution 5), the clinical applications for the management of dental caries through procedures involving minimal intervention in pediatric patients (contribution 6), and the use of formocresol (contribution 7).

Because of the aesthetic influence of enamel defects, a systematic review evaluated microabrasion in the management of enamel discolorations in paediatric dentistry (contribution 8).

Another corpus of literature reviews aimed at considering patients' psychological and satisfaction outcomes related to dental treatment. In particular, a group of research addressed the effect of orthodontic pain on dental anxiety (contribution 9), whereas another one explored the patient satisfaction towards two different dental isolation systems (contribution 10).

Considering the relationship of pediatric dentistry with other fields like orthodontics and maxillofacial characteristics, the timing of early correction of mandibular hypoplasia in skeletal Class II malocclusion has been reviewed (contribution 11), as well as the influence of rapid maxillary expansion and mandibular advancement for treating obstructive sleep apnea (contribution 12), and the evidence on the 2×4 appliance in the mixed dentition stage (contribution 13). In addition to that, the congenital cranio-facial abnormalities in paediatric population (contribution 14), the bite force of children and adolescents (contribution 15), and both temporomandibular disorders and orofacial neuropathic pain in children and adolescents (contribution 16) have been reviewed.

Finally, evaluating periodontal pathologies in pediatric patients, the relation between this latter and juvenile idiopathic arthritis has been the object of a systematic review and metaanalysis (contribution 17).

Considering previous published literature on pediatric dentistry, the number of papers appears to be low if compared to other fields [9]. The area of greatest pediatric interest in the dental field appears to be dental caries [10]. It is desirable that publications on pediatric dentistry topics increase in number and interest also in the pediatric medical literature, allowing a closer bidirectionality between these the two related fields [1]. Accordingly, the JOCPD will welcome future studies and literature reviews aimed at improving the clinical knowledge and research on pediatric dentistry, including remineralizing agents [11, 12], probiotics [13, 14], characteristics of dental materials [15], innovative instruments [16–20], new techniques and treatments combined with other dental disciplines such as orthodontics [21], restorative dentistry [22], prosthodontics [23, 24], periodontology [25] and dental hygiene [26].

AVAILABILITY OF DATA AND MATERIALS

The data are contained within this article.

AUTHOR CONTRIBUTIONS

AS—performed conceptualization, data extraction and manuscript review. MP—wrote the draft text. Authors equally contributed to the present research. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

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CONFLICT OF INTEREST

The authors declare no conflict of interest. Andrea Scribante is serving as the Editor in Chief of this journal, and Maurizio Pascadopoli is serving as the Editorial Board member of this journal.

LIST OF CONTRIBUTIONS

[1] Lui DT, Wahab RMA, Kuppusamy E, Hamzaid NH, Hassan MR, Yazid F. Association of early childhood caries and nutritional status: a scoping review. J Clin Pediatr Dent. 2023 May; 47(3): 11–25. doi: 10.22514/jocpd.2023.021. Epub 2023 May 3. PMID: 37143418.

[2] Zhai Y, Gao L, Yu G. Does dental caries play a role on the asthma development?—Systematic review and metaanalysis. J Clin Pediatr Dent. 2023 Jul; 47(4): 95–103. doi: 10.22514/jocpd.2023.040. Epub 2023 Jul 3. PMID: 37408352.

[3] Jiménez ADP, Mora VSA, Dávila M, Montesinos-Guevara C. Dental caries prevention in pediatric patients with molar incisor hypomineralization: a scoping review. J Clin Pediatr Dent. 2023 Jul; 47(4): 9–15. doi: 10.22514/jocpd.2023.030. Epub 2023 Jul 3. PMID: 37408341.

[4] Zhang B, Zhao M, Duan S, Tian J, Lei L, Huang R. An economic evaluation of pit and fissure sealants and fluoride varnishes in preventing dental caries: a systematic review. J Clin Pediatr Dent. 2023 Sep; 47(5): 4–11. doi: 10.22514/jocpd.2023.048. Epub 2023 Sep 3. PMID: 37732430.

[5] Meng N, Liu Q, Dong Q, Gu J, Yang Y. Effects of probiotics on preventing caries in preschool children: a systematic review and meta-analysis. J Clin Pediatr Dent. 2023 Mar; 47(2): 85–100. doi: 10.22514/jocpd.2023.014. Epub 2023 Mar 3. PMID: 36890746.

[6] Garrocho-Rangel A, Navarro-Padilla P, Guzmán-Uribe D, Torre-Delgadillo G, Ruiz-Rodríguez S, Pozos-Guillén A. Clinical interventions for caries management through minimal intervention procedures in young children: an updated evidence-based review. J Clin Pediatr Dent. 2023 Nov; 47(6): 1–10. doi: 10.22514/jocpd.2023.076. Epub 2023 Nov 3. PMID: 37997229.

[7] Issrani R, Prabhu N, Bader AK, Alfayyadh AY, Alruwaili KK, Alanazi SH, Ganji KK, Alam MK. Exploring the properties of formocresol in dentistry—A comprehensive review. J Clin Pediatr Dent. 2023 May; 47(3): 1–10. doi:10.22514/jocpd.2023.020. Epub 2023 May 3. PMID: 37143417.

[8] Blanchet I, Camoin A, Tardieu C, Jacquot B. Microabrasion in the management of enamel discolorations in paediatric dentistry: a systematic review. J Clin Pediatr Dent. 2023 Jan; 47(1): 17–26. doi: 10.22514/jocpd.2022.015. Epub 2023 Jan 3. PMID: 36627216.

[9] Xie L, Ma Y, Sun X, Yu Z. The effect of orthodontic pain on dental anxiety: a review. J Clin Pediatr Dent. 2023 Sep; 47(5): 32–36. doi: 10.22514/jocpd.2023.051. Epub 2023 Sep 3. PMID: 37732433.

[10] Bagher SM, Sabbagh HJ. A literature review of clinical efficiency, patient satisfaction, and future preference of Isolite and DryShield dental isolation systems among pediatric patients. J Clin Pediatr Dent. 2023 Jul; 47(4): 1–8. doi: 10.22514/jocpd.2023.029. Epub 2023 Jul 3. PMID: 37408340.

[11] Huo B, Che X, Li X. Timing of early correction of mandibular hypoplasia in skeletal class II malocclusion: a review. J Clin Pediatr Dent. 2023 Nov; 47(6): 11–20. doi: 10.22514/jocpd.2023.077. Epub 2023 Nov 3. PMID: 37997230.

[12] Lima Illescas MV, Aucapiña Aguilar DC, Vallejo Ledesma LP. A review on the influence of rapid maxillary expansion and mandibular advancement for treating obstructive sleep apnea in children. J Clin Pediatr Dent. 2023 Jan; 47(1): 9–16. doi: 10.22514/jocpd.2022.035. Epub 2023 Jan 3. PMID: 36627215.



[13] Garrocho-Rangel A, Hernández-García G, Yáñez-González E, Ruiz-Rodríguez S, Rosales-Berber M, Pozos-Guillén A. 2×4 appliance in the mixed dentition stage: a scoping review of the evidence. J Clin Pediatr Dent. 2023 Jan; 47(1): 1–8. doi: 10.22514/jocpd.2022.033. Epub 2023 Jan 3. PMID: 36627214.

[14] Minervini G, Marrapodi MM, Cervino G, Franco R, Lanza A, Cicciù M, Di Francesco F. Congenital cranio-facial abnormalities in paediatric population: a systematic review on temporomandibular disorders. J Clin Pediatr Dent. 2023 Sep; 47(5): 12–18. doi: 10.22514/jocpd.2023.049. Epub 2023 Sep 3. PMID: 37732431.

[15] Jayakumar P, FelsyPremila G, Muthu MS, Kirubakaran R, Panchanadikar N, Al-Qassar SS. Bite force of children and adolescents: a systematic review and meta-analysis. J Clin Pediatr Dent. 2023 May; 47(3): 39–53. doi:10.22514/jocpd.2023.022. Epub 2023 May 3. PMID: 37143420.

[16] Minervini G, Marrapodi MM, Fiorillo L, Franco R, Cicciù M, Cervino G. Temporomandibular disorders and orofacial neuropathic pain in children and adolescents: a systematic review. J Clin Pediatr Dent. 2023 May; 47(3): 26–38. doi: 10.22514/jocpd.2023.019. Epub 2023 May 3. PMID: 37143419.

[17] Tang J, Dong L, Ran J, Liu Z, Li Y. Association between juvenile idiopathic arthritis and periodontal diseases: a systematic review and meta-analysis. J Clin Pediatr Dent. 2023 Sep; 47(5): 19–31. doi: 10.22514/jocpd.2023.050. Epub 2023 Sep 3. PMID: 37732432.

REFERENCES

- [1] Nadeeshani H, Kudagammana ST, Herath C, Jayasinghe R, Liyanage R. Early childhood caries and nutritional status of children: a review. Food and Nutrition Bulletin. 2023; 44: 249–264.
- ^[2] Abdelaziz M. Detection, diagnosis, and monitoring of early caries: the future of individualized dental care. Diagnostics. 2023; 13: 3649.
- [3] Shokravi M, Khani-Varzgan F, Asghari-Jafarabadi M, Erfanparast L, Shokrvash B. The impact of child dental caries and the associated factors on child and family quality of life. International Journal of Dentistry. 2023; 2023: 4335796.
- [4] Adobes Martin M, Zhou Wu A, Marques Martínez L, Gonzalvez Moreno AM, Aiuto R, Garcovich D. What is trending in paediatric dentistry? An Altmetric study on paediatric dentistry journals. European Archives of Paediatric Dentistry. 2021; 22: 291–299.
- [5] Rashid MF, Karobari MI, Halim MS, Noorani TY. Effectiveness of visual-tactile examination and DIAGNOdent pen in detecting early enamel caries and its remineralisation: an *in vitro* Study. BioMed Research International. 2022; 2022: 1263750.
- [6] Butera A, Maiorani C, Morandini A, Simonini M, Morittu S, Barbieri S, *et al.* Assessment of genetical, pre, peri and post natal risk factors of deciduous molar hypomineralization (DMH), hypomineralized second primary molar (HSPM) and molar incisor hypomineralization (MIH): a narrative review. Children. 2021; 8: 432.
- [7] Pitts NB, Baez RJ, Diaz-Guillory C, Donly KJ, Alberto Feldens C, McGrath C, *et al*. Early childhood caries: IAPD Bangkok declaration. Journal of Dentistry for Children. 2019; 86: 72.
- [8] Warreth A. Dental caries and its management. International Journal of Dentistry. 2023; 2023: 9365845.
- ^[9] Ohta L, O'Brien B, Knight H, Patel J, Anthonappa RP. Publication trends

in pediatric dentistry journal: a 20-year bibliometric analysis (1999–2018). Pediatric Dentistry. 2020; 42: 354–358.

- [10] Chalmers NI, Wislar JS, Hall M, Thurm C, Ng MW. Trends in pediatric dental care use. Dental Clinics of North America. 2018; 62: 295–317.e12.
- Butera A, Gallo S, Pascadopoli M, Montasser MA, Abd El Latief MH, Modica GG, Scribante A. Home oral care with biomimetic hydroxyapatite vs. conventional fluoridated toothpaste for the remineralization and desensitizing of white spot lesions: randomized clinical trial. International Journal of Environmental Research and Public Health. 2022; 19: 8676.
- [12] Imran E, Cooper PR, Ratnayake J, Ekambaram M, Mei ML. Potential beneficial effects of hydroxyapatite nanoparticles on caries lesions *in vitro*—a review of the literature. Dentistry Journal. 2023; 11: 40.
- [13] Zhang JS, Chu CH, Yu OY. Oral microbiome and dental caries development. Dentistry Journal. 2022; 10: 184.
- [14] Butera A, Pascadopoli M, Nardi MG, Ogliari C, Chiesa A, Preda C, et al. Clinical use of paraprobiotics for pregnant women with periodontitis: randomized clinical trial. Dentistry Journal. 2024; 12: 116.
- [15] Beretta M, Federici Canova F, Gianolio A, Zaffarano L. Beyond the Clinic: why new bioactive restorative materials have really changed Paediatric Dentistry. European Journal of Paediatric Dentistry. 2023; 24: 292–296.
- [16] Kim IH, Cho H, Song JS, Park W, Shin Y, Lee KE. Assessment of real-time active noise control devices in dental treatment conditions. International Journal of Environmental Research and Public Health. 2022; 19: 9417.
- [17] Mladenovic R, Arsic Z, Velickovic S, Paunovic M. assessing the efficacy of AI segmentation in diagnostics of nine supernumerary teeth in a pediatric patient. Diagnostics. 2023; 13: 3563.
- [18] Bonny T, Al Nassan W, Obaideen K, Al Mallahi MN, Mohammad Y, El-Damanhoury HM. Contemporary role and applications of artificial intelligence in dentistry. F1000Research. 2023; 12: 1179.
- [19] Al-Namankany A. Influence of artificial intelligence-driven diagnostic tools on treatment decision-making in early childhood caries: a systematic review of accuracy and clinical outcomes. Dentistry Journal. 2023; 11: 214.
- [20] Graves A, Grahl T, Keiserman M, Kingsley K. Systematic review and meta analysis of the relative effect on plaque index among pediatric patients using powered (electric) versus manual toothbrushes. Dentistry Journal. 2023; 11: 46.
- [21] Wang N, Yu J, Yan J, Hua F. Recent advances in antibacterial coatings for orthodontic appliances. Frontiers in Bioengineering and Biotechnology. 2023; 11: 1093926.
- [22] Amorim Junior LA, Braga BR, Castro CG, Corrêa-Faria P. Minimal intervention procedures: evaluating how much pediatric dentists really know about this field. Brazilian Oral Research. 2022; 36: e0124.
- [23] Alzanbaqi SD, Alogaiel RM, Alasmari MA, Al Essa AM, Khogeer LN, Alanazi BS, *et al.* Zirconia crowns for primary teeth: a systematic review and meta-analyses. International Journal of Environmental Research and Public Health. 2022; 19: 2838.
- [24] Hamrah MH, Mokhtari S, Hosseini Z, Khosrozadeh M, Hosseini S, Ghafary ES, *et al.* Evaluation of the clinical, child, and parental satisfaction with zirconia crowns in maxillary primary incisors: a systematic review. International Journal of Dentistry. 2021; 2021: 7877728.
- ^[25] Drummond BK Silva T, Lunardi AJL, Barros ACSM, Mandetta ARH, Grudzien E, San-Martín M, *et al.* Application of photodynamic therapy in pediatric dentistry: literature review. Pharmaceutics. 2023; 15: 2335.
- [26] Brosnan MG, Leichter JW. Management of periodontal health in children: pediatric dentistry and periodontology interface. Periodontology 2000. 2017; 74: 158–167.

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