Common dental diseases in children and malocclusion.

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Abstract

Background:
Dental diseases are common among all individuals, but they are of great concern among pediatric group. This great importance comes from the fact that poor oral health and dental diseases in childhood result in poor oral health in adulthood and further oral problems and diseases regarding the development of diseases. The dental diseases in childhood can affect the permanent teeth if not treated properly. The aim of this study is to highlight the most common dental diseases and malocclusion among pediatrics.

Methods:
The articles involved in this review were obtained through research through scientific websites using several keywords.

Results:
The articles included to write the current review were published between 2014 and 2020; the review was written under subheadings in the discussion part.

Conclusion:
The dental diseases of children are common, and the most common diseases are dental caries and malocclusion; dental caries can lead to malocclusion.

Keywords: Dental diseases, Common, Children, Malocclusion.
**Introduction:**

Oral health is an essential part of the general health of an individual, and no one can be considered totally healthy while the oral cavity is affected by a disease [1]. The most common dental diseases are malocclusion, dental caries, and fluorosis, and gingival diseases [2].

Malocclusion is a deviation from the normal relationship between jaws and teeth. Malocclusion is a considerable clinical variation from the normal fluctuation of morphology and growth of the oral structures. Malocclusion develops as a result of inconsistency between the bone size and the teeth or from incompatibility in the development of the maxillary bone [3].

Dental caries is an infectious degenerative and chronic disease that is caused by multifactors. Dental caries damages and affect the hard tissue of the oral cavity. It is one of the most common diseases affecting the pediatric population [4]. This review was conducted to highlight the most common diseases among the children population.

**Methods:**

Obtained scientific articles to write the current review required an online searching process to search for articles related to the current subject. We searched for articles through scientific websites such as Pubmed and Google scholar. Several keywords were used to obtain all possible articles related to the current subject, such as "Pediatrics, children, dental diseases, malocclusion.". We obtained articles published between 2009 and 2020, whereas we included articles which were published between 2014 and 2020.

**Discussion:**

*Malocclusion:*

Malocclusion is a non-life-threatening condition; however, it can affect the functions in speech, mastication of food, and poor dentofacial esthetics that affects the quality of life of the individual [5]. According to the world health organization (WHO), it is the third priority for oral health diseases [6].
Malocclusion etiology is variable and complex; malocclusion can occur due to environmental factors, hereditary factors, or both. However, the genetic factors contribute to the development of oral pathologies such as periodontal disease and caries, which are also associated with social factors such as poverty [7,8]. The progression of malocclusion can be attributed to the impact of oral habits, which can affect the structures of the stomatognathic system depending on the intensity, duration, and frequency [8].

Studies demonstrated correlations between the malocclusion and its severity with social status, where children with poor lifestyles required more orthodontic treatment compared to their counterparts with a healthier lifestyle [9,10]. Poor oral health can lead to caries and early loss of teeth; also, it can facilitate the development of malocclusion [11,12]. A study from Lebanon showed that the lower socioeconomic status of children led to more severe malocclusion and poorer general dental health compared to Who and Western norms [13]. An association between malocclusion and the progression of periodontal diseases has been reported [14].

The prevalence of malocclusion varies between studies and countries due to the variations in the population under investigation, such as variation in ethnicity, population age, and variations in the study design, including sample size and methods of measurements [13]. Malocclusion is in the third rank among oral pathologies and the second to tooth decay and periodontal disease [15]. Studying of malocclusion in pediatrics is essential as malocclusion in primary dentition is the determinant of malocclusion in permanent dentition according to some cohort studies. A systematic review reported a global prevalence of malocclusion of 56% with no variation in gender; the highest prevalence of malocclusion was found in Africa (81%), followed by Europe (72%), America (53%), and finally Asia (48%). Moreover, the prevalence score of malocclusion didn’t vary from primary to permanent dentition [6]. The prevalence of malocclusion varies in Chile among children between 5 to 15 years old, where the prevalence ranges from 65% to 72.6% depending on age, diagnostic criteria, and ethnic group [18]. A more recent study from Chile published in 2020 reported a prevalence of 81.6% among children between 5 to 15 years old [3], indicating an increase in the prevalence of malocclusion among children.
Dental caries was defined by The American Academy of Pediatric Dentistry (AAPD) as the presence of decayed either cavitated or non-cavitated teeth, filled tooth surfaces in any primary tooth, or missing tooth as a result of caries in children with one month of age or younger. Severe early childhood caries is indicated in the presence of any sign of smooth-surface caries in children younger than three years of age [19].

Dental caries and its complications are very prevalent among children, as they are the main cause of seeking dental care for children [7]. There are several factors that cause a high incidence of dental caries, including poor oral hygiene, poor diet, and the anatomical characteristics of the deciduous teeth [7]. Dental caries and its complications cause more severe and extensive consequences in the primary dentition than in permanent dentition [20]. The extensive untreated dental caries has many consequences, including changing the distribution of functional occlusal contact and reduction in mastication or asymmetric mastication; the long-term unilateral mastication, in turn, leads to compromised facial growth, which in turn results in dental-facial deformities and malocclusion [21-23]. The interproximal decay of the primary molars and canines leads to a reduction in the width of the mesiodistal crown. The tendency of the adjacent area to migrate toward the affected area increases resulting in a reduction in the length of the dental arch. Tooth displacement, problems of dental crowding, occlusal stability, and chewing ability can be caused by the loss of the arch length [7].

Bagramian et al. in 2009 reported a global increase in the prevalence of dental caries; the authors, in their review, reported the prevalence of dental caries in ten countries [24]. It was found that 66% of Chinese children five years old had caries according to the third national oral epidemiological report [25]. The prevalence of dental caries in Saudi Arabia among three to four years and five to six-year-old children was 72.77% [26].

The AAPD foundation documented protective and biological factors as well as clinical findings in the guideline on caries-risk assessment and management for pediatrics and adolescents. In order to decrease the risk of caries and assure the best health and developmental outcomes, anticipatory guidance was set and included education of oral hygiene, dietary counseling, and fluoride application in various forms [27].
The trauma of the primary teeth:

The dental trauma of pediatrics is very common as they are more prone to trauma due to increased physical mobility in order to learn walking. The anterior maxillary primary teeth are the most exposed and susceptible to trauma, whereas the mandibular primary teeth are less likely to traumatic injuries [28]. The common types of primary tooth injuries recorded, including luxation, avulsion, and crown fractures. Severe trauma of the primary teeth can cause injury or disturbance for the development of the successor permanent teeth. The germs of the permanent teeth develop palatal to the primary teeth, in close proximity to or within millimeters of the root apices of their predecessors. The potential sequelae of a traumatic incidence include partial or total root development, white-yellow-brown discoloration, enamel hypoplasia, crown-root dilacerations, and the ectopic eruption of the permanent teeth [29-32].

Regular examination for the primary teeth exposed to trauma shouldn’t be overlooked to avoid major damage resulting from the pathological changes of the periapical or pulp tissues. Careful clinical examination and diagnosis should be made to avoid the consequences that occur to the permanent teeth caused by the trauma of the deciduous teeth [7].

Abnormal teeth development:

Hyperdontia refers to the additional teeth or teeth-like structures that erupted or remained un-erupted in addition to the regular number of teeth. It is more common in the maxilla than in the mandible. The most common type of hypodontia is the mesiodens, with additional teeth developing between the maxilla central incisors. Hyperdontia can result in several problems such as crowding, failure of eruption, an abnormal diastema, rotation, or displacement of the adjacent teeth [33]. The additional teeth can be unilateral, or bilateral, single or multiple, appear in one or both jaws. The most common location of the development is the anterior maxillary region; however, they can develop in any region of the dental arch. The teeth may erupt in a normal manner, appear inverted, erupted in an abnormal route, or remained impacted [34].
The supernumerary teeth should be extracted to facilitate the eruption of the adjacent main teeth and avoid the displacement of the permanent teeth. The extraction process should be done with caution because the procedure can disturb the development, eruption, and alignment of the permanent teeth [7].

Ectopic eruption of the teeth is another abnormality in the teeth; it is the eruption of the tooth in abnormal orientation or position; the most affected teeth are the maxillary canines and maxillary first permanent molars. The disturbance between the required space of the eruption of the tooth and the available space results in the occurrence of ectopic eruption of the permanent maxillary first molar. Almost 66% of ectopic eruption occurs in the maxilla bilateral or unilateral. The prevalence of permanent maxillary first molar is 0.75% to 6% [7,35].

**Pupal and periapical lesions of the deciduous teeth:**

Oral microorganism infections of the pulp cause the pupal and periapical lesions in deciduous teeth. Dental caries is the most common route for entry and infection by microorganisms [36]. Predecessors with vital pulps are the context for normal eruption of permanent teeth, and inflammation of primary tooth pulp and penetration into the surroundings can influence the tooth germ of the permanent successor and periradicular structures if no intervention is initiated, which may arise abnormal development and eruption of the successor such as delayed, ectopic eruption or premature of permanent teeth. This, in turn, results in irregular eruption and alignment of successors and increases the possibility of malocclusion occurrence [37]. The early loss of primary teeth as a result of severe periapical lesions can affect the masticatory function, change maxillofacial and systemic development and growth. Also, it can cause the loss of occlusal stops and vertical dimensions, leading to increased overjet and deep overbite [7]. The dentists should exert their efforts to preserve the vitality of the pulp of the primary teeth to reduce the adverse outcomes of these endodontic diseases [7]. The AAPD indicated that the therapy for pulp could be indirect if the deciduous teeth with no irreversible pulpitis; the therapy involves no removal of the deepest carious dentin to avoid exposure of the pulp. Direct pulp capping is appropriate for a primary tooth following a small traumatic or mechanical exposure other than carious pulp exposure with a normal pulp accompanied by a favorable response. A pulpotomy procedure is
recommended if the removal of caries results in pulp exposure in primary teeth with reversible pulpitis or normal pulp. The primary teeth with necrotic pulp or irreversible pulpitis are recommended to be treated with nonvital pulp treatment-pulpectomy [38].

**Conclusion:**

Children are more prone to dental diseases due to food habits and poor oral hygiene. There are several types of dental disease common among children. The most common dental diseases of pediatrics are malocclusion and dental caries. Malocclusion can be caused by dental caries and other factors. The studying of dental diseases among children is necessary as dental diseases in childhood can affect permanent teeth. However, there is a lack of focus on such a problem. There is no focus on dental diseases among children; few studies studied and reported other dental diseases.

**Recommendations:**

Studies should be conducted on dental disease among children, not only the prevalence but also on nature, etiology, and report the management of the different dental diseases.

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**References:**


