ASSESSMENT OF CARIES IN PERMANENT FIRST MOLARS (DMFT) AND OCCLUSION IN CHILDREN AGED 7 TO 12 YEARS ATTENDING DENTISTRY COLLEGE IN DUHOK CITY

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ABSTRACT

Background: Tooth decay is a chronic, infectious and preventable disease that is very communal around the world.. The teeth with decay that are found in children mostly are the permanent first molars (PFMs). It has been detected that dental caries affect not only the majority of adults but also 60% to 90% of children. The teeth with decay that are found in children most often are the permanent first molars (PFMs). Aim: The aim of the current study is to evaluate the decayed, missing and filled teeth (DMFT) scores of first permanent molars (FPMs) in the early post-eruptive stage and prevent the complications of primary loss of FPM..
Material and method: Across sectional study was conducted through collecting data from 650 children attended to pediatric department / dentistry college / Duhok university through the academic year (2022-2023), the data were collected through using DMFT index and PFMs occlusion. Result: The mean number of DMFT for PFMs was 0.79 - 1.39, and the mean DMFTs was 0.88 - 1.44 in girls and 0.69 - 1.34 in boys. The prevalence of class l occlusion in males was 33%, and 46% in females, while class ll occlusion was 6% in males and 7% in females. Class lll occlusion was 5% in males and 3% in females. Conclusions: The current epidemiological study highlights the importance of early evaluation of PFMs in the post-eruptive stage and raising public awareness of oral health in order to reduce DMFT scores.

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Keywords: Dental caries, DMFT index, PFMs occlusion.

Dental decay is the most prevalent illness of the oral health in school-aged children round the world[1,2]. Dental caries chiefs to tooth pain, discomfort, eating impairment, damage of tooth, and delayed language development in children[3,4]. Furthermore, dental decay affects children's roles and body growth and imposes a financial burden on their families[5]. In addition, children with dental decay are exposing to distress and nervousness which can affect to both severity and imperfect treatment of the condition[6].

Tooth loss is still considered a serious public health issue that lowers a person's quality of life[7]. The majority of caries-prone teeth in the mixed dentition have been shown to be first permanent molars (FPMs), which are among the earliest permanent teeth to erupt in the oral cavity. In addition, these teeth are more susceptible to periodontal disorders and hypo mineralization, which could lead to early tooth loss if treatment needs are not addressed. Furthermore, FPMs play a critical role in the development of occlusion and arch integrity, and the early loss of

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these teeth may have an impact on spatial relations, which may have a major impact on the dentition's balance[8].

The goal of the study is to estimate the decayed, missing and filled teeth (DMFT) scores of first permanent molars (FPMs), and prevent the complications of early loss of FPM among children aged (7-12) years old attending pediatric department in Duhok city by raising awareness for the prevention and treatment of permanent teeth caries, besides, assessment of PFMs occlusion.

MATERIALS AND METHODS:

Across sectional study will be conducted by collecting data from 650 children attended to pediatric department / dentistry college / Duhok university through the academic year (2022-2023), the data were collected through using DMFT index and PFMs occlusion.

The WHO protocol was reserved as a basis for the dental examinations[9]. Teeth examinations of the students were carried out in the clinics of pediatric department by using a dental mirror and a sharp probe, under good led light and in an upright position. All PFMs were examined in a systematic approach, starting from the upper right PFM and proceeding through the lower right one. Caries index used in this study is DMFT, collection of data was done by using mixed dentition chart and the components of caries index are as follow:

DMFT:

D component: (Decayed teeth that measured)

1-Carious tooth, 2-Filled, 3-Only the roots are left, 4-Defect filling, 5-Temporary filling, 6-Filled tooth surface with another surface decayed

M component: (Missing teeth due to caries)

Missing teeth that not measured with this index DMF:

1-Tooth that extracted for reasons other than caries: a-Orthodontic treatment, b-Impaction. c-Periodontal disease, 2-Unerupted teeth, 3-Congenitally missing, 4-Avalsion teeth due to trauma or accident.

F component: (Filled teeth due to caries)

-Teeth stored for reason other than dental caries not measured with this index: a-Trauma (fracture), b-Hypoplasia (cosmetic purposes). c-Bridge abutment (retention), d-Seal a root canal due to trauma, e-Fissure sealant, f-Preventive

The collection of occlusion data were obtained from the children those were already joined to pediatric clinic through examining the oral cavity using sterile mouth mirror and good lightening, followed by evaluation of all the occlusal relations in centric occlusion position (COP). COP was achieved by asking the participant to swallow, and then to bite on his or her posterior teeth together. The occlusion traits were assessed as usual occlusion or malocclusion using the first permanent molars as described by E.H. Angle and deviation from line of occlusion[10]. Descriptive statistics like mean and proportions were calculated. The cheeks were fully retracted by cheek retractors in order to get a direct lateral view of the dentition in occlusion on both the right and left side

RESULTS

The present study analyzed the data of a total of 650 children, 286 girls and 364 boys (table 1, figure1) indicate the status of sound, decayed, missing and filled PFMs by gender. There was a statistically significant difference between the genders regarding the number of sound, decayed, missing and restored PFMs. The higher number of sound PFMs in girls ($p < 0.001$) revealed a statistically significant difference when compared to the number of decayed ($p < 0.001$) and restored ($p = 0.024$) PFMs in boys. The mean number of DMFT for PFMs in these patients was 0.79 - 1.39, and the mean DMFTs were 0.88 - 1.44 in girls and 0.69 - 1.34 in boys.

Table 1. Status of sound, decayed, missing and filled PFMs by gender [n (%)].

Gender	S	D	M	F	Total	DMFT
Female (286)	496 (43.4%)	488 42.70%	48 4.20%	112 9.80%	1144 100%	648 (39.7%)
Males (364)	472 32.40%	784 -53.80%	24 1.60%	176 12.10%	1456 100%	984 (60.2%)
Total (650)	968 37.20%	1272 (48.9%)	72 2.80%	288 11.10%	2600 100%	1632 (100%)

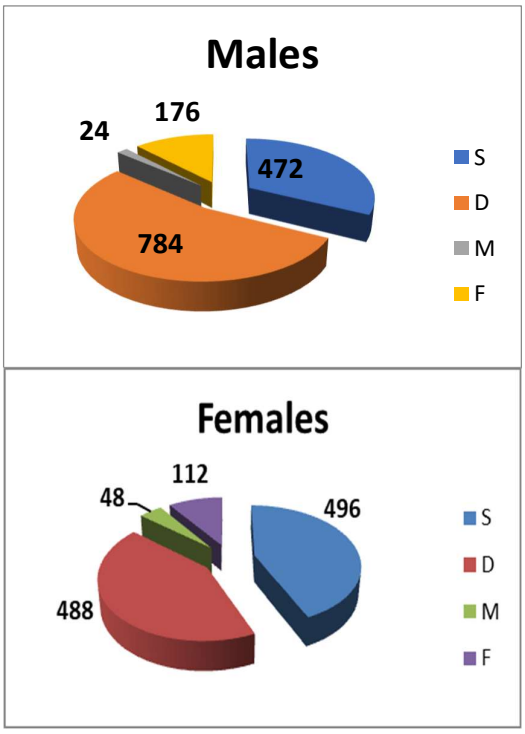

Figure 1: Status of sound, decayed, missing and filled PFMs by gender [n (%)].

The Prevalence of DMFT for PFMs among 286 girls was 39.7%, while for boys was 60.2% (table 1, figure 2).

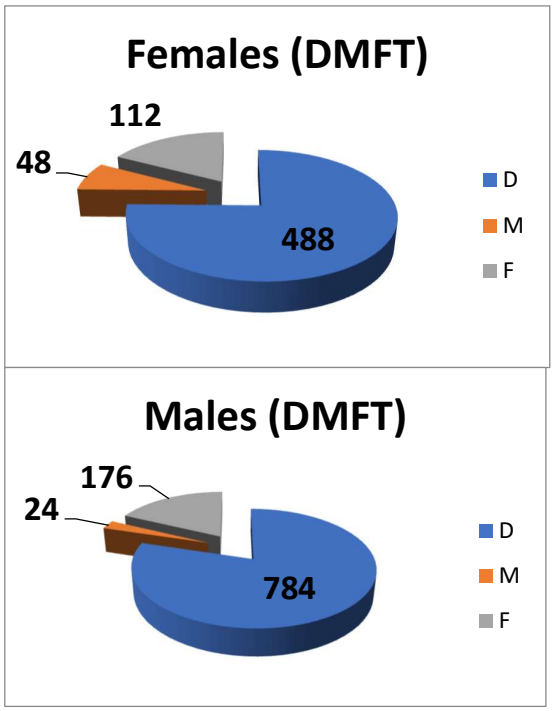

Figure 2: Prevalence of DMFT for girls and boys

The prevalence of class l occlusion in males was 33%, and 46% in females, while class ll occlusion was 6% in males and 7% in females. Class lll occlusion was 5% in males and 3% in females. (Table 2, figure 3).

Table 2: prevalence of PFMs occlusion

Mal-occlusion	Sex	Total No.	Total No.%
Class I	Male	215	33%
	Female	297	46%
Class II	Male	38	6%
	Female	48	7%
Class III	Male	33	5%
	Female	19	3%
Total		**650**	**100%**

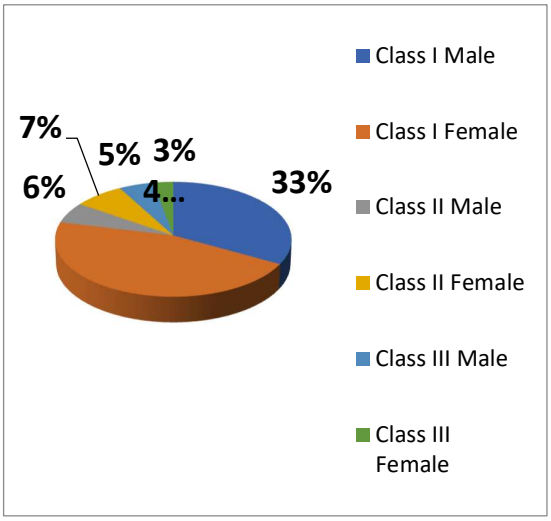

Figure 3: Prevalence of PFMs occlusion

DISCUSSION

PFMs have an important role in the development of a normal occlusion. Thus, it is very essential to protect them in order to have good oral health. Their anatomical features including deep pits, fissures and concavities provide a very favorable environment for plaque accumulation. Parental misunderstanding that PFMs are deciduous and children's incomplete tooth brushing pathway at younger ages in the early PFM eruption stages cause these teeth to develop decay in a short time[9]. Premature PFM loss is commonly notice, mostly in the first three years of post-eruptive period when enamel has not been fully mineralized. The premature loss of these teeth may cause midline deviation, diastema formations, super eruption of the antagonists, and unilateral mastication resulting in malocclusion[2]. The purpose of the study was to estimate the PFM status of the children aged 7–12 years in the post-eruptive first three years.

The most widely used epidemiological measure for assessing dental health status is the DMFT/dmft index[11]. It is crucial to regularly control the changes in these scales through epidemiological studies that will be conducted with various age groups and in various regions in order to plan and carry out the required healthcare and treatment project.

It is known that PFMs are fully matured in the first 2 years of post-eruptive stage and they are more susceptible to decay attacks in this period. This may result in early PFM caries, the need for restoration as the decay progresses with the age, and even the dental loss. Higher DMFT index scores of PFM associated with age, and especially dramatic increases in the caries incidence have been reported in the literature[12].

In our study the prevalence of decayed PFMs in males was 53.8% which is higher than in females 42.7%. The prevalence of filled MFPMs in males also was 12.1% which is higher than in females 9.8%, these results are similar to the results of some other studies[13,14].

In the reverse, there is many studies expose that DMFT ratio is higher in girls, it has been stated that higher rates of tooth decay development probability in the girls' PFMs might have been associated with early puberty and premature eruption, their different dietary and oral hygiene habits, and difference in their quality and quantity of saliva[15,16]. While other studies detect that the ratio is equal of both gender[17] by better personal oral hygiene rather than the gender factor.

In this study, Class I occlusion was being the most prevalent (79%). As well Class I occlusion was 33% than in males and 46% in females and this was found same to the works of Das et al among 745 school children aged 8–12 years[18]. Class III molar relationship was 5% in males, and 3% in females which was least prevalent of all the occlusion forms. Other studies had also reported Class III occlusion as least prevalent such as Das et al. found 0.6% Class III occlusion as least prevalent; Al Jadidi et al. 2% among Tanzanian school children and Yu et al found 5.9% in Shanghai city[19].

This evaluation of prevalence among the population could provide topical information about the malocclusion. Hence,

this input could be used to create effective public dental health plans for orthodontic prevention and better screening in Duhok city. It might also help to indicate the need for orthodontic treatment to improve public dental health.

CONCLUSIONS

In this study, the prevalence of caries in the PFMs of children aged 7–12 years was 62.8%. This result showed that PFMs might develop carious lesions and even be lost within three years in the early post-eruptive stage. The current epidemiological study highlights the importance of early evaluation of PFMs in the post-eruptive stage and raising public awareness of oral health in order to reduce DMFT scores, and this can be performed by promotion of educational programs.

Conflict of interest: non

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پوختە

هەلسەنگاندنا رزینا ددانێن پێشەکییێن هەمیشەیی (DMET) و پربون و رێگری کرن (الانسداد) ل دەڤ زاروکێن ژێ وان دناڤبەرا 7-12 سالیدا یێن هاتین بەشێ کولیژا ددانان ل پاریزگەها دهوکێ

پێشەکی و ئارمانج: ژناڤ چوون یان رزینا ددانان نەخوشیەکا درێژ خایەنە و ڤەگرە و دشیاندایە خو ژێ بپاریزین و ل جیهانێ زوور یا بەربەلاڤە. و یا هاتیە زانین و دوزین کو رزینا ددانان نە بتنێ کارێگەرێ ل سەر کەسێن تەمەن مەزن دکەت و ڤەدگریت بەلکو ب رێژا 60% هەتا 90% زاروکان ڤەدگریت. ئەو ددانێن رزین لێ پەیدا دبیت ل دەف زاروکان پتریا جاران ددانێن دەستپێکێ نە یێن هەمیشەیی (PFMs).

ئارمانج ژ ڤێ ڤەکولینێ نها هەلسەنگاندنا ئەنجامێن ددانێن رزی و ژ دەستدای و پربوی(DMFT) ژ بوو ددانێن هەمی شەیی یێن پێشەکیی (FPMs) دقوناغا بەروەختدا پشتی دەرکەفتنێ و رێگیری کرن ژلاوازبوون و دەستدانا دەستپێکێ یا ددانێن هەمی شەیی بریکا بەرزکرنا راددێ تێگەهشتنێ و چارەسەریا رزینا ددانێن هەمی شەیی سەرەرای هەلسەنگاندنا قەپکرنا نە دروست

رێکرێن کارکرنێ: لێکولین و خواندنەکا بربرەیی دێ هێتە ئەنجامدان بریکا کومکرنا داتایێن 600 زاروکێن هاتینە دناڤا بەشێ پزیشکیا زاروکان / کولیژا پزیشکیا ددانان / زانکویا دهوك دسالێن خواندنێ دا (2022-2023) و داتا هاتینە کومکرن بکارئینانا پیڤەرێ (DMFT) و داپوشراوا PFMs.

دەرئەنجام: ڤەکولین و خواندنا پەتای یا نوکە بومە روون دکەت گرنگیا هەلسەنگاندن و دیفچوونا پێشوەخت ژ بو PFMs پشتی قوناغا هاربوون و زێدەبوونا تێگەهشتنا گشتی بو ساخلەمیا دەڤی ژبو کیم کرنا راددە و پلێن DMFT.

الخلاصة

تقييم التسوس في الأضراس الأولى الدائمة (DMFT) والانسداد لدى الأطفال الذين تتراوح أعمارهم بين 7 إلى 12 سنة الملتحقين بكلية طب الأسنان في مدينة دهوك

الخلفية والأهداف: تسوس الأسنان هو مرض مزمن ومعدي ويمكن الوقاية منه وهو منتشر جدًا في جميع أنحاء العالم. لقد تم اكتشاف أن تسوس الأسنان لا يؤثر فقط على غالبية البالغين ولكن أيضًا على 60% إلى 90% من الأطفال .

الأسنان التي تعاني من التسوس والتي توجد عند الأطفال في أغلب الأحيان هي الأضراس الأولى الدائمة (PFMs)

الهدف من الدراسة الحالية هو تقييم نتائج الأسنان المسوسة والمفقودة والمملوءة (DMFT) للأضراس الدائمة الأولى (FPMs) في المرحلة المبكرة بعد البزوغ ومنع مضاعفات الفقد الأولي للأسنان الدائمة من خلال رفع مستوى الوعي بتثبيط و علاج تسوس الأسنان الدائم، بالإضافة إلى تقييم سوء الإطباق.

طرق العمل: سيتم إجراء دراسة مقطعية من خلال جمع البيانات من 600 طفل التحقوا بقسم طب الأطفال / كلية طب الأسنان / جامعة دهوك خلال العام الدراسي (2022-2023)، وتم جمع البيانات باستخدام مؤشر DMFT وتغطية PFMs

الاستنتاجات: تسلط الدراسة الوبائية الحالية الضوء على أهمية التقييم المبكر لـ PFMs في مرحلة ما بعد الثوران وزيادة الوعي العام بصحة الفم من أجل تقليل درجات DMFT.