

School-age dental screening: oral health and eating habits

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Abstract

Aim. the study has the purpose to evaluate the association between clinical data collected from dental screening carried out on children and their eating habits. **Materials and methods:** The dental screening was carried out on a sample of eight-year-old children attending the third grade of the elementary schools of Gaeta (Latina). Clinical data and periodontal status indexes were recorded. The descriptive statistics (mean, standard deviation, frequency) of all data were calculated and anova analysis and chi square test have been performed.

Results. On the sample of 70 children the results showed an average of 1.4 decayed teeth per child (sd \pm 2.3) with a slightly higher average in females. More than 68% of the sample had poor or insufficient oral hygiene conditions with plaque presence in 64% of cases. Moreover, 57% of children had class II malocclusion with increased overjet and oral breathing respectively in 37% and 30% of cases. Only 24% were breastfed in the first months of life and more than 40% maintained a bad habit for over two years of age. About eating habits, more than 80% of the sample consumed sweets or sweet drinks every day. The analysis of the data showed as children consume several snacks throughout the day, and 47% eat them watching TV.

Conclusion. The results of this study showed how prevention program carried out through the School is more effective on children for learning of content especially when the acquisition of knowledge follows the application and verification of theoretical and practical skills in terms of oral health. *Clin Ter 2019; 170(1):e36-40. doi: 10.7417/CT.2019.2105*

Key words: oral health, children, school, sugar intake

Introduction

The incidence of dental caries, the most common oral diseases, remains high in pediatric age, despite the undoubted improvements obtained in terms of general health (1). A systematic review carried out in 2015 shows that 2.4 billion people are affected by caries, while untreated caries interests 621 million children, representing the 10th most prevalent condition worldwide (2). Pediatric patients affected by caries can experience not only pain but subsequent sleeping disorders with altered school attendance and performance

(3), altered eating habits (4), body weight loss and growth decrease (5). As a multifactorial disease, many factors (biological and socio-behavioral) are involved in development of the disease; it's clear the association of dental caries and nutritional factor, as the frequency of consumption of cariogenic food (6, 7, 8). In this context parents' ability to forbid or limit the assumption of cariogenic snacks appears to be fundamental, as to stimulate children to correct oral hygiene practice (9). Other factors involved in the development of children dental caries are represented by income, education and family size, as reported in the studies of Tanaka et al. (10) and Farsi et al. (11). Therefore, the detection of these lesions at early stages, appears of fundamental significance to avoid further pathological manifestations; the status of permanent and primary dentition are, as supported by evidence based (12, 13), closely correlated: this indicates the importance of understanding the risk factor of unhealthy in the early years of life. In this context, school dental screening plays an important role as stated by WHO in 2003 (14). Despite its popularity among public health interventions in many countries throughout the world, until now, there was no scientific evidence about the effectiveness of school dental screening leading to timely interventions and cost reduction (15). The aim of this study is to evaluate the association between clinical data collected from dental screening carried out on children, attending third classes of elementary school, and their eating habits, especially those related to the consumption of sugars.

Materials and methods

The dental screening was carried out on a sample of eight-year-old children attending the third grade of the elementary schools of Gaeta (Latina). The managerial staff and the parents of the children were made aware of the purpose of the study and signed their informed consent. The study protocol conformed to the ethical guidelines of the 1975 Declaration of Helsinki and was approved by the appropriate ethics committee of Sapienza University of Rome. A team of students of Dental Hygiene School of Latina dedicated

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a whole day to the educational intervention on the topic of oral health prevention and a team of dentists belonging to Dental hygiene School made dental visits. Clinical data and periodontal status indexes were recorded on a special clinical folder: the World Health Organization (WHO) caries scores index (dmft) was used to describe the dental caries status of each child (16), while the degree of oral hygiene was expressed by a judgment with a scoring from insufficient, poor, good to excellent; moreover, the type of malocclusion was identified. Parents completed a questionnaire that collected anamnesis of their children and information about oral hygiene and dental health practices (e.g., details about tooth-brushing, dental visits, past dental history) and about eating habits (e.g. frequency of sugary food consumption, type of meals). Data analysis was performed Preliminarily a descriptive analysis has been performed, in particular, averages, medians, s.d., range and percentage and subsequently an Anova analysis for between-groups comparisons has been computed, while a chi square test has been used for testing relationships between categorical variables.

As usual, a type I error (alpha) has been set to 0.05, thus a test is considered significant for $p < 0.05$. Data were analyzed using the Statistical Packages for the Social Sciences (SPSS Statistics version 21.0).

Results

A sample of 70 eight-year-old children participated at the study, in particular 33 males and 37 females and the dental screening was performed for all children. The screening results are summarized in Table1 that showed a average values for dmft of 0.09 for females e 0.11 for males.

Table 1. Descriptive analysis for gender

Variables	dmft Mean \pm SD	Decay Mean \pm SD	Missing Mean \pm SD	Filled Mean \pm SD
Gender				
Female	0.09 \pm 0.12	1.51 \pm 2.5	0.19 \pm 0.70	0.41 \pm 1.26
Males	0.11 \pm 0.13	1.36 \pm 2.1	0.30 \pm 0.68	0.88 \pm 1.54

As regards, the number of teeth that are decayed (D), missing (M), or filled (F) in an individual as it is possible to observe have a mean, respectively for females and males, of 1.51 vs 1.36 for the first one, 0.19 vs 0.30 for missing teeth and 0.41 vs 0.88 for the last one.

In the graphical representation (Fig.1) it is possible to display the dmft Index distribution by gender.

The plot shown a concentration on the first value of dmft for female while the males distribution is more scattered.

The mean value of decayed teeth per child was 1.4 (sd \pm 2.3) with a slightly higher average in females (mean value 1.51sd \pm 2.5), compared to males (1.36 sd \pm 2.1) (Fig.2).

The information collected by the questionnaire and summarized in table 2, are about oral hygiene and dental health practices and about eating habits.

The plaque was present in 50% of sample and the 17.1% with plentiful situation and the percentage remain more or less the same for gender. Tartar was absent in 70% of cases and only a small percentage, less than 5% with plentiful tartar.

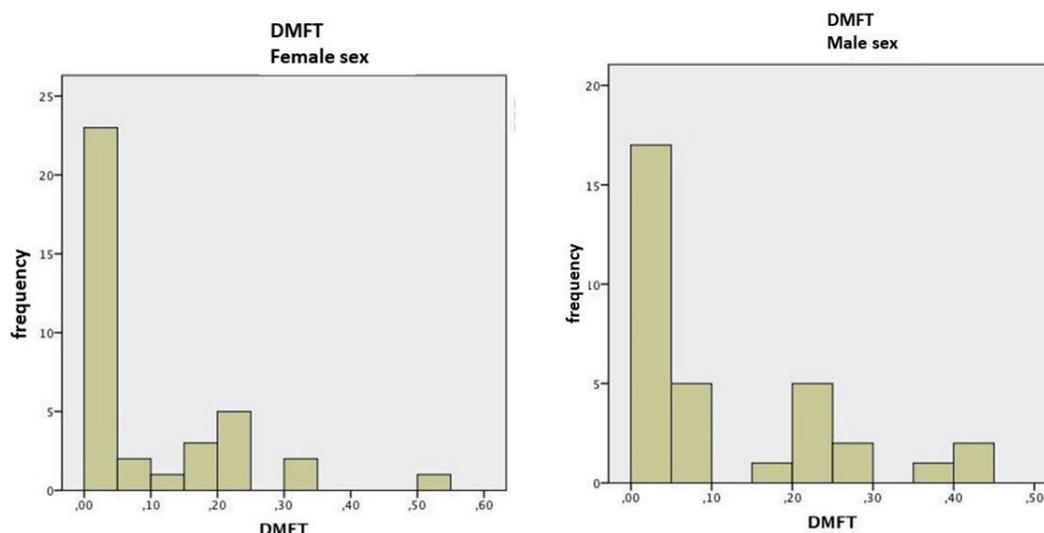


Fig.1 Values of dmft in females and males

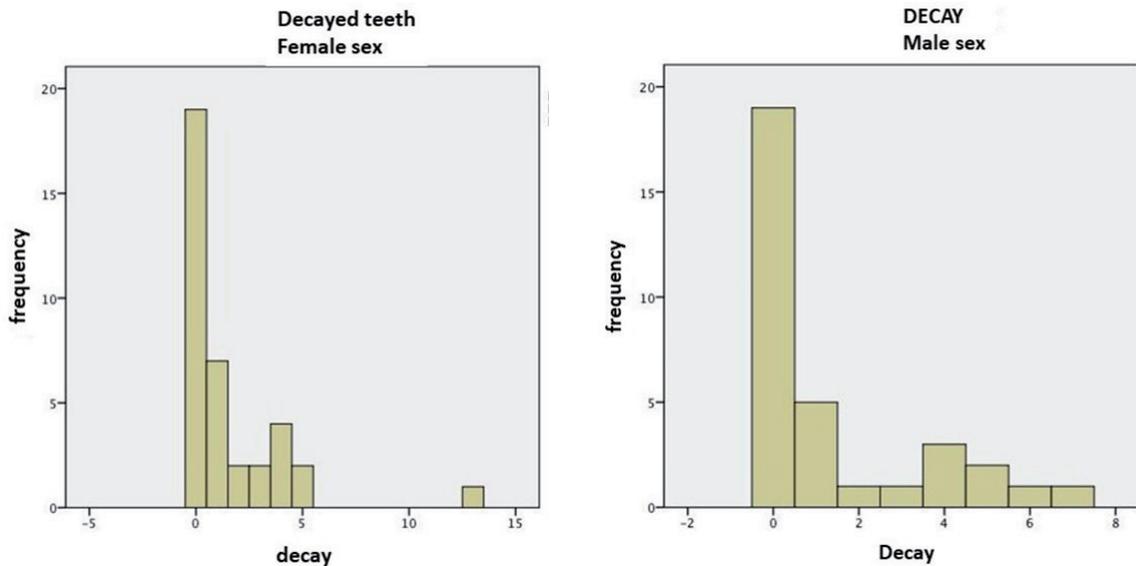


Fig. 2. values of decayed teeth in females and in males

Table 2. Oral hygiene, dental health practices and eating habits of child in the sample

Variables	Total	Female	Males
Plaque			
Absent	32.9%	29.7%	36.4%
Present	50.0%	51.4%	48.5%
Plentiful	17.1%	18.9%	15.2%
Tartar			
Absent	70.0%	73.0%	66.7%
Present	25.7%	21.6%	30.3%
Plentiful	4.3%	5.4%	3.0%
Oral hygiene condition			
Absent	14.3%	13.5%	15.2%
Mediocre	54.3%	62.2%	45.5%
Optimal	31.4%	24.3%	39.4%
How many times a day wash the teeth			
1 time a day	18.6%	21.6%	15.2%
2 times a day	50.0%	54.1%	45.5%
3 times a day	30.0%	24.3%	36.4%
more than 3 times	1.4%	0%	3.0%
Snack at school			
No snack	4.3%	0%	9.1%
Fruit	2.9%	2.7%	3.0%
Salty food	44.3%	48.6%	39.4%
Salty and sweet food	10.0%	13.5%	6.1%
Sweet food	38.6%	35.1%	42.4%
How many sweet have taken a week			
Never	1.4%	0%	3.0%
Sometimes	51.4%	51.4%	51.5%
Nearly Every Day	30.0%	35.1%	24.2%
Everyday	17.1%	13.5%	21.2%

As regards the value of the treated teeth the total average was 0.6 (sd ± 1.4). Although 78% of the children visited have already had a dental check-up more than 68% of the sample have poor or insufficient oral hygiene conditions with plaque presence in 67.1% of cases even though 81.4% of children report to wash teeth two or three times a day. An optimal oral hygiene condition was registered only in 31.4% of the sample with differences between gender, in fact the optimal condition goes down to 24.4% for females while for males it rises at 39.4%.

On the other hand, in 70% of children there was no presence of calculus and gingivitis.

More than 57% of children presented II class malocclusion with increased overjet (37% of cases) and oral respiration (30% of cases) while 40% maintained a bad habit (baby bottle, pacifier etc.) for over two years of age. About the eating habits, more than 80% took sweets or sweet drinks every day. More than 38% of children did not eat fruit during the week and 21% did not eat vegetables. Analysis of the data showed that children made several snacks throughout the day: 55% of them consumed at least three ones and 47% were used to eat while watching TV; 44.3% of the sample preferred snack at school with a salty food, 38.6% sweet food, 10% alternately sweet and salty ones, only a percentage of 2.9% eat fruit and 4.3% did not eat anything.

The sweets that child consume in a week are in 51.4% sometimes and only the 17.1% everyday with a differences between gender of 13.5% (females) vs 31.2% (males).

After a descriptive analysis, a ANOVA analysis has been implemented in order to individuate whether there are any statistically significant differences between the means of two or more groups and the differences that are resulted statistically significant, using the p-value, are reported in bold in table 3.

Table 3. Output of ANOVA analysis, in bold are reported statistically significant differences.

Variables	dmft (Mean)	p value
Gender		
Female	0.09	0.572
Males	0.11	
How many snacks do in the day		
No snack	0.10	0.259
one	0.15	
more than one	0.08	
at least three	0.08	
Snack at school		
No snack	0.16	0.016
Fruit	0.21	
Salty food	0.06	
Salty and sweet food	0.04	
Sweet food	0.15	
Scheletrical asymmetry		
Absent	0.10	0.261
Present	0.18	
Oral hygiene condition		
Absent	0.18	0.050
Mediocre	0.10	
Optimal	0.06	
How many times a day wash the teeth		
1 time a day	0.10	0.137
2 times a day	0.08	
3 times a day	0.11	
more than 3 times	0.37	
How many sweet have taken a week		
Never	0.04	0.963
Sometimes	0.10	
Nearly Every Day	0.10	
Everyday	0.09	
Everyday	0.09	
How many sugary drinks in a week		
Never	0.11	0.512
Sometimes	0.11	
Nearly Every Day	0.10	
Everyday	0.05	
When you watch tv you are eating something		
No	0.12	0.140
Yes	0.08	

There was a statistically significant difference between groups as determined by one-way ANOVA for the snacks consumed at school ($p = 0.016$) and for oral hygiene condition ($p = 0.050$).

For dmft no significant statistical differences were found for sex ($p = 0.572$), number of snacks in a day ($p = 0.259$), scheletrical asymmetry ($p = 0.261$), number of times washing teeth ($p = 0.137$), number of sweets in a week ($p = 0.963$), number of sugary drinks in a week ($p = 0.512$), to eat while watching tv ($p = 0.140$).

Moreover, the Chi Square test was used for testing relationships between categorical variables. No significant statistical differences were found.

Discussion

The screening performed identified an average of 1.4 carious teeth per child, still far from the WHO goal for 2020 that is

90% of the caries-free population (17). From the analysis of the data it emerges that despite the fact that in 80% of the cases children have already carried out a dental check, the oral hygiene conditions are inadequate to indicate child's difficulty in performing a correct oral hygiene at home, also associated with a low frequency of tooth brushing. The data emerging from our study confirm the results of previous studies (18, 19) about the correlation between the school-supervised tooth brushing and the dental caries risk reducing: this result evidences that the state of knowledge concerning tooth-brushing needs to be improved. The high mean value of dmft index found in our study can be significantly associated with the consumption more than once a week of sweetened food, according to the role of sugar as a risk factor in the initiation of dental caries (20).

It should also be noted that most children that eat vegetables and fruit during the week instead of high consumption of sweets, fruit juices and sugary drinks not followed by adequate oral hygiene, favoring the continuous acidification of salivary pH and increasing the risk of developing carious lesions.

During intermediate meals it is better to consume fresh fruit (except for bananas with a high sugar content) compared to sweet foods, pastries or snacks. It's important to note that it is not the amount of sugar that causes the caries but the frequency of intake (21).

Conclusion

The results of this study show how, although young parents are very attentive to their children oral health (22) through periodical dental check-up, this is often not enough to motivate and sensitize children to perform proper home hygiene. In fact, the critical issues emerge both in the evaluation of the quality of oral hygiene of the child and in the choice of foods to be eaten out of the main meals. This is why the prevention intervention carried out through the school is more effective on the child for the learning of content especially when the acquisition of knowledge follows the application and verification of theoretical and practical skills in terms of oral health (23). Despite the small sample size and the need of further studies, this project in schools is also designed to inform parents about the importance of oral prevention (24), especially in the age of development, because it represents the stage in which children acquire food experiences and habits that will be an integral part of their well-being and knowledge, and influence their quality of life (25).

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