

## Dependence of Cavity Caries Lesions And OHI-S on Children Aged 4 To 6 Years

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### Abstract

**Background:** From the FDI Congress 2012, tooth decay is considered to be a "behavioral disease with a bacterial component".

**Objective:** The aim is to determine the relationship between the number of lesions (d3 + d4), OHI-S and age for children's groups.

**Material and Methods:** Object of observation. 1 group - 100 children aged 4, 5 and 6 years treated with Clinpro™ White Varnish with TCP (Tri-Calcium phosphate) (3M) – CV.

2 group - 100 children aged 4.5 and 6 years without treatment with varnish CV. Oral-Hygiene Index, OHI-S Greene & Vermillion (PI / 6 + CI / 6) - (Modified) is used to establish Oral Hygiene status. Location of the study – University Medical Dental Center Varna, Clinical Halls for Children's Dentistry, Faculty of Dental Medicine – Varna. A specialized STATISTICA 10.0 package is used for statistical analysis of the data. (Stat Soft, Inc., STATISTICA Manual (Data Analysis Software System), Version 10.0, 2010).

**Results:** The number of caries d3 + d4 (cavity lesions), as OHIs dependent, and the age of the patient in the treated group at p-level of significance  $p < 0.001$ . From the resulting p-levels for OHIs and age of the patient, it can be seen that the number of irreversible caries d3 + d4 depends on OHIs Green-Vermillion /  $p < 0.001$ .

The results in control group show that there was a significant difference in the number of cavitated lesions in untreated children, indicating a downward trend with increasing age. The highest number is for 4-year-olds (4.75), and the smallest for 6-year-olds (2.80).

**Conclusion:** The results of the analysis showed that there is a functional dependence between OHI (S) and d3 + d4 in temporary teeth, which shows that the high OHI (S) and the high number of lesions d3 + d4 in temporary teeth lead to a significantly higher risk from the development of caries in the future.

**Keywords:** caries, cavity lesions, temporary teeth, OHI-S

### I. Introduction

From the FDI Congress 2012, tooth decay is considered to be a "behavioral disease with a bacterial component" [Peters MC, Manton DJ, Leal SC, Gordan VV, Eden E. 2012]. According to the Consensus of the "National Association in the Republic of Bulgaria of the doctors for pediatric dentistry for the treatment of caries of temporary teeth 2013", there are nine important risk factors [1,2,3]. Moderate or high level of streptococci and lactobacilli; Visible plaque on the teeth; More than three intermediate meals; Deep wells and fissures; Inadequate saliva qualities - salivary current, pH, buffer capacity; Factors that reduce salivary secretion; Orthodontic apparatuses; The caricature of the parents; Low social status [4,5].

**Objective:** The aim is to determine the relationship between the number of lesions (d3 + d4), OHI-S and age for children's groups. Task: Determination of the relative share of children divided by groups according to OHI-S Greene & Vermillion: 0-1; 1,1-2; 2.1-3.

### II. Material and Methods

#### Clinical evaluation of oral hygiene status

- Oral-Hygiene Index, OHI-S Greene & Vermillion (PI / 6 + CI / 6) - (Modified) is used to establish Oral Hygiene status.

- The index of representative teeth (55 or 16, 11 or 51, 65 or 26, 31 or 71 vestibular, 75 or 36, and 85 or 46 lingual) is recorded in the PLI, plaque index, the plaque distribution on the dental surfaces. Take four codes from 0-3.
- On the basis of the OHI-S value, children are divided into three groups according to the degree of plaque accumulation: 0.1-1.1 - good oral hygiene; 1,1-2,0-satisfactory oral hygiene; 2.1-3.0 - poor oral hygiene.
- For the purposes of our study, we only used the first part of the PLI associated with dental plaque buildup because the age of 4-6 years excludes tartar calculus (CAL - calculus index).

• **Surveyed metrics:**

- Relative share of children divided by groups according to OHI-S Greene & Vermillion: 0-1; 1,1-2; 2.1-3

**Object of observation**

1 group - 100 children aged 4, 5 and 6 years treated with Clinpro™ White Varnish with TCP (Tri-Calcium phosphate) (3M) – CV

2 group - 100 children aged 4.5 and 6 years without treatment with varnish CV

**Units of observation**

- Temporary teeth
- dmft, dmfs
- Cavity caries lesions at level d3 and d4

**Location of the study**

- University Medical Dental Center - Varna
- Clinical Halls for Children's Dentistry, Faculty of Dental Medicine - Varna

**III. Methodology**

- All patients examined and treated from the two study groups were given a comparative analysis of the results of the study using appropriate statistical methods.
- The study includes 200 children from 4 to 6 years of age. Apply OHI-S to Green-Vermillion. Children are at high risk of caries and are divided into two groups. The first group consists of 100 children, 50 girls and 50 boys divided into two subgroups. The subgroup of 4 and 5 year old children wash their teeth with a toothpaste containing 500 ppm F. The subset of children aged 6 years use a toothpaste containing 1000 ppm F. At the second, a control group of 100 children, of which 50 girls and 50 boys do not carry out motivational activities.
- Motivation procedures are performed after a precise protocol:
- - Plaque preview on tooth surfaces is provided with color tablets. The relationship between the intensity of the accumulation and the thickness of the dental plaque is discussed with the children and their parents.
- Demonstration of the right sweeping and circular tooth brushing movements on a plastic model of the upper and lower jaws. The distal sectors of the upper and lower teeth are emphasized, especially in the area of the temporary molar fissures.
- The extent of gingival bleeding is assessed by applying a periodontal probe (WHO).

A specialized STATISTICA 10.0 package is used for statistical analysis of the data. (Stat Soft, Inc., STATISTICA Manual (Data Analysis Software System), Version 10.0, 2010).

**IV. Results**

The number of caries d3 + d4 (cavity lesions), as OHIs dependent, and the age of the patient in the Clinpro White Varnish (TCP) treated group at p-level of significance  $p < 0.001$ , we obtain: (Table 1).

**Tab. 1.** Dependency between the indicator number of lesions (d3 + d4), OHI-S and age of the children in the treated group

<b>Caries d3 + d4-group with white varnish - Test of all effects</b>			
<b>Distribution : POISSON</b>			
<b>Link function: LOG</b>			
	<b>Degr. of - Freedom</b>	<b>Wald - Stat.</b>	<b>p</b>
<b>Intercept</b>	1	12,26536	0,000461
<b>OHI's with group with white varnish</b>	1	26,82303	0,000002
<b>Age-with group with white varnish</b>	2	1,00103	0,606218

From the resulting p-levels for OHIs and age of the patient, it can be seen that the number of irreversible caries d3 + d4 depends on OHIs Green-Vermillion /  $p < 0.001$  /. From the resulting p-levels for OHIs and age of the patient, it can be seen that the number of cavitated caries d3 + d4 depends on OHIs and does not depend on the age of the children ( $p > 0.05$ ), although fluctuations in the mean Number of caries in the three children aged. After the relationship between the values for d3 + d4 lesions, there was an age - dependency of the children included in the control group, but no dependence was found on the Green-Vermillion OHI-S index of the tested children (Table 2).

**Tab. 2.** Dependence between d3 + d4 lesions and OHI-S and age of children in the control group

Caries d3 + d4 control group - Test of all effects (DAMYANOVA.sta) Distribution : POISSON			
Link function: LOG			
	Degr. of - Freedom	Wald - Stat.	p
<b>Intercept</b>	1	36,27752	0,000000
<b>OHIs control group</b>	1	0,41514	0,519374
<b>Age control group</b>	2	8,57696	0,013726

The results of Table 3 show that there was a significant difference in the number of cavitated lesions in untreated children, indicating a downward trend with increasing age. The highest number is for 4-year-olds (4.75), and the smallest for 6-year-olds (2.80).

**Tab. 3.** Distribution by age and N (number of lesions d3 + d4) for the control group

Age in control						
Weighted Marginal Means						
Wald $X^2(2)=8,5770, p=,01373$						
	Age in years Control Group	Caries d3+d4 Control group - Mean	Caries d3+d4 Control group - Std.Err.	Caries d3+d4 Control group - 95,00	Caries d3+d4 Control group - +95,00	N
<b>1</b>	4	4,750000	1,359490	1,535316	7,964684	8
<b>2</b>	5	2,857143	0,704698	1,132810	4,581476	7
<b>3</b>	6	2,802326	0,338104	2,130083	3,474568	86

## V. Discussion

In our study - The results show that there was a significant difference in the number of cavitated lesions in children, indicating a downward trend with increasing age. Enamel is the first factor on which the development of the carious process depends. It is made of apatite crystals, tightly arranged in prisms and possesses high resistance properties [6]. Resistance of the enamel varies depending on various factors. In addition to the treatment of caries, it is necessary to include also the protective factors: Optimal fluor prophylaxis; Good oral hygiene; Protective properties of saliva; Proper and complete nutrition; Regular prophylactic examinations twice a year [7,8,9,10,11,12].

## VI. Conclusion

1. Every age has caries activity on temporary teeth.
2. Oral hygiene at any age is unsatisfactory.
3. The results of the analysis showed that there is a functional dependence between OHI (S) and d3 + d4 in temporary teeth, which shows that the high OHI (S) and the high number of lesions d3 + d4 in temporary teeth lead to a significantly higher risk from the development of caries in the future.

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