Association of Oral Hygiene Status with Caries Incidence in Primary Teeth

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24th Global
Dentists and Pediatric Dentistry Annual Meeting
June 11-12, 2018 London, UK

Abstract

Objective: The aim is to determine the relationship between the OHI-S, caries incidence and age for children's groups.
Material and Methods: Object of observation. 1 group - 100 children aged 4.5 and 6 years without treatment with varnish CV. 2 group - 100 children aged 4, 5 and 6 years treated with Clinpro ™ White Varnish with TCP (Tri-Calcium phosphate) (3M) – 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 resulting p-levels are less than 0.05, indicating that the dmft variable (dental caries frequency) also depends on the OHI-S values and the age factor of the study groups of children. The above table shows that there is a statistically significant difference in OHI-S mean values, as p-level = 0.0000001 < 0.05. The hypothesis of equivalence of mean values at a significance level of 0.05 is discarded. The presence of a statistically significant difference in average of OHI-S for untreated and OHI-S for treated children means that the index values for untreated children are higher than those for the treated children (p-level = 0.0000001, p < 0.05).
Conclusion: A Poisson regression for dependent values of the dmft index of OHI-S and lower jaw, factor dmft /p-levels of less than p < 0.05/. We found a statistically significant difference.

Key words: caries, cavity lesions, primary teeth, OHI-S

Background

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].
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 [1,2,3,4]. 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 [5,6,7,8].

Objective

The aim is to determine the relationship between the OHI-S, caries incidence and age for children's groups.

Materials and methods

Oral-Hygiene Index, OHI-S Greene & Vermillion (PI / 6 + CI / 6) - (Modified) is used to establish Oral Hygiene status. 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 without treatment with varnish CV, 2 group - 100 children aged 4, 5 and 6 years treated with Clinpro ™ White Varnish with TCP (Tri-Calcium phosphate) (3M) – CV. Units of observation: Primary teeth, dmft, dmfs. Caries lesions at level d1, d2, d3 and d4. Location of the study: University Medical Dental Center-Varna, Clinical Halls for Children's Dentistry, Faculty of Dental Medicine - Varna

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).

Results

The resulting p-levels are less than 0.05, indicating that the dmft variable (dental caries frequency) also depends on the OHI-S (PLI) values and the age factor of the study groups of children (Figure 1).

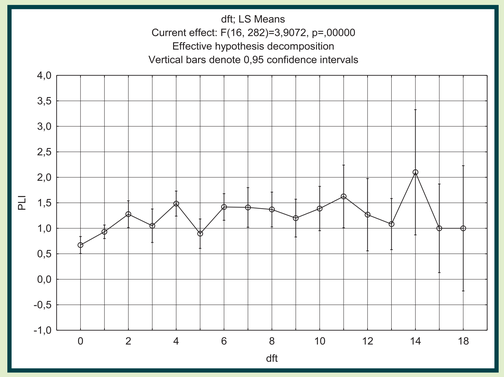

Figure 1. Poisson regression of the values of the variable dmft. Variation of average values for OHI-S Green-Vermillion at different levels for dmft.

Tab. 1. T-test for statistical significance of difference between average of OHI-S

T-test for Independent Samples
Note: Variables were treated as independent samples

	Mean - Group 1	Mean - Group 2	t-value	dmf	p	Valid N - Group 1	Valid N - Group 2	Std.Dev. - Group 1	Std.Dev. - Group 2
OHI -S Group 1 OHI -S Group 2	1,57666	0,85598	9,77	297	0,0000001	100	100	0,69	0,52

The above table shows that there is a statistically significant difference in OHI-S mean values, as p-level = 0.0000001 < 0.05. The hypothesis of equivalence of mean values at a significance level of 0.05 is discarded. The presence of a statistically significant difference in average of OHI-S for untreated and OHI-S for treated children means that the index values for untreated children are higher than those for the treated children (p-level = 0.0000001, p < 0.05) Table 1.

Tab. 2. T-Test for the dmft dependence of OHI-S Green-Vermillion and the upper jaw (dmft factor)

dmft - Test of all effects
Distribution : POISSON Link function: LOG

	Degr. of- Freedom	Wald - Stat.	p
Intercept	1	159,2923	0,000001
OHI -S	1	3,8636	0,049343
Upper jaw	11	61,3765	0,000002

Tab. 3. Poisson regression for dmft depending on OHI-S and dmft factor of lower jaw.

dmft - Test of all effects Distribution : POISSON
Link function: LOG

	Degr. of- Freedom	Wald - Stat.	p
Intercept	1	199,0259	0,000000
OHI -S	1	4,2078	0,040238
Lowerjaw	8	37,1460	0,000011

In our research the results show that there was a significant difference in the number of lesions in children, indicating a downward trend with increasing age (Table 2 and Table 3).

Conclusions

1. Every age has caries activity on primary teeth.
2. Oral hygiene at any age is unsatisfactory.
3. A Poisson regression for dependent values of the dmft index of OHI-S and lower jaw, factor dmft /p-levels of less than p < 0.05/. We found a statistically significant difference.

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