**ABSTRACT OF SCIENTIFIC PAPERS**

**To the chief assistant Dr. Dobrinka Mitkova Damyanova, PhD**

Presented for participation in a competition for the academic position "Associate Professor" in the field of higher education 7. Health and sports, professional field 7.2. Dentistry in the specialty **"Pediatric Dentistry",** Medical University "Prof. Dr. Paraskev Stoyanov "of Varna, published in the State  
Journal of the Republic of Bulgaria Issue 86, 06.10.2020.

***The following scientific papers are presented for participation in the competition:***

- Monograph - 1 pc.

- Full-text publications in Bulgarian and foreign scientific journals, arranged in chronological order 37 copies, (abstracts of publications are not included, a total of 11 copies of the list, as they are presented in defense of Educational and Scientific Degree - 4 articles and Competition for Academic Position Chief Assistant - 7 pcs. articles).

- Scientific and educational films on CEM microscope: 6 films

- Participation with posters and reports in Bulgarian and foreign scientific forums (9 pcs.), Arranged in chronological order.

1. **DISSERTATION WORK FOR ACQUISITION OF EDUCATIONAL AND SCIENTIFIC DEGREE "DOCTOR"**

**"Prevention and treatment of initial dental caries with fluoride varnishes in children from 3 to 6 years." Varna. 2017**

The carious process is initiated under the enamel surface, just below the dental plaque, on which surface various factors of the oral environment act. The biofilm is always metabolic, active, with frequent fluctuations in pH. It depends on the balance between protective and risk factors whether the carious process will continue until a clinically diagnosed, carious lesion is established or will reverse - the released mineral ions will be deposited back into the crystal structure and remineralized. The processes of de- and remineralization take place repeatedly and continuously during the day. And depending on which of them predominates, the carious lesion may develop or the damaged structure may be restored. The aim of the dissertation is to study and evaluate the effectiveness of the mineralizing varnish CV(Clinpro White Varnish, 3M) after non-invasive treatment of caries of primary teeth and to create a non-operative preventive treatment approach.

The object of observation are 300 children from the city of Varna aged 3 to 6 years, distributed equally in age-standardized groups with the same number of boys and girls. The total number of primary teeth - 5900 and the total number of carious lesions - 759 / reversible and irreversible / on teeth and surfaces were examined. The distribution of teeth affected by caries in each age group has been determined. The relative shares of children with dental caries by age groups were compared. The average values ​​of the teeth and surfaces affected by caries were compared: vestibular, occlusal, proximal and oral. The values ​​of active and inactive carious lesions d1 and d2 together were determined.Variation analysis is used to determine the average values ​​- the standard deviation, the rank of the measured value / the difference between the minimum and maximum value standard error / is established by dispersion. An analysis of the frequency distribution and its graphical representation was used.

Student's T-test was used to compare two means, the Paired-Samples T-Test was used for two independent samples, and the Anova one-way analysis of variance was used to compare several independent samples. The U test according to the method of Mann and Whitney test X² and correlation according to Pearson are used.

We determined the correlation between OHI-S, risk, age and dmft in primary teeth - Pearson Correlation index. After processing the results and determining the accents, the actual study was conducted by processing the data with a package for mathematical and statistical processing SPSS v 20.0. With the experimental study we observe the processes of de- and remineralization that occur after application of Clinpro White Varnish varnish in the surface and subsurface layer of the enamel of samples of primary teeth. The earliest changes in the enamel in carious lesions and their redevelopment / remineralization / or retention as a result of Clinpro White varnish varnish have also been experimentally proven on samples.

The effectiveness of the mineralizing varnish with tricalcium phosphate fluoride was established by chemical analysis in experimental conditions with modern methods of CEM microtomography and X-ray diffraction. The evaluation of the effectiveness of the remineralization of Clinpro White Varnish, applied to reversible, active carious lesions and surfaces, by diagnostics based on laser fluorescence allowed to prepare a clinical protocol for their prevention and treatment. Of the 300 children examined, aged 3 to 6 years, we received dmft = 4.40 ± 0.21 and dmfs = 6.35 ± 0.65. Every age has carious activity of primary teeth. Oral hygiene at any age is unsatisfactory to poor. For 4-year-olds OHIs is 1.9, for 5-year-olds OHIs is 2.0 and for 6-year-olds OHIs is 2.3.

Reversible lesions predominate for the examined patients, any age is suitable for non-invasive preventive treatment. A need has been identified for a new approach of pediatric dentists, oriented towards programming preventive and non-invasive treatment of children according to their individual needs. The surface of the tooth is uneven, with areas of varying degrees of unevenness.

In the uneven areas, the height of the irregularities of the potentially remineralized coating crystals is between 6 and 14 μm, with a horizontal size of 14-40 μm. An area is observed in the tooth enamel, which is remineralized with a layer with a density close to that of healthy tooth enamel and a thickness of 10-14 μm. We observed the formation of a coating due to the diffusion of ions from the varnish to the surface of the tooth enamel. The coating is composed mainly of fluoroapatite. The application of Clinpro ™ White Varnish varnish is effective in preventing enamel demineralization as a method for non-invasive treatment of primary teeth.

In conclusion, Clinpro ™ White Varnish is effective in reducing the demineralization of the subsurface layer and in improving the remineralization of the surface and subsurface enamel layer.

1. **MONOGRAPHIC (HABILITATION) WORK**

**Damyanova D.M. Invasive treatment of irreversible pulpitis of primary teeth**, **University Publishing House, Medical University of Varna, 2020, p. 145. ISBN 978-619-221-255-1.**

Abstract: The monograph presents in detail the pathology of caries without cavitation, the clinical complications and the accompanying initial pulp-dentin reactions. The new treatment concept regarding the diagnosis and selection of treatment methods for uncavitated and cavitated dental caries is considered. New solutions have been found based on the morphological changes in tooth enamel in the occurrence of carious lesions, based on the new definition of caries in recent years, new classifications, new diagnostic approaches, as well as new tools and methods of application.

The advantages and disadvantages of the main endodontic methods of biological treatment, pulpotomy and pulpectomy for primary teeth are compared. An important point in the diagnosis, determining the need for treatment, the choice of treatment method and means is to determine the nature of the carious process and to distinguish between active, stationary and regressed carious lesions. The modern approach requires motivated participation of the patient and / or his parents in the treatment, periodic check-ups, participation of the patient in the control of his own oral environment and health. Suitable for non-invasive treatment are most of the carious pathology in childhood - reversible carious lesions reported with the new index systems / threshold of diagnostic activity indices and reversible indices of carious lesions / at the earliest possible stage of their occurrence, including at the primary dentition. Healthy primary teeth are a prerequisite for healthy permanent teeth or temporary dentition predetermines healthy teeth for life. The indicated management of the carious process is to increase the degree of resistance of the hard dental tissues before the appearance of the defects by means of fluorine remineralizing agents or medical prophylaxis of the existing carious lesions.

This opportunity was also provided by modern clinical and diagnostic instruments based on laser fluorescence. Young patients often differ in the level of their response to pain. Severe, prolonged, spontaneous pain is diagnosed as irreversible pulpitis or dental abscess. The results of the comparative analysis of the surveyed children by sex and age did not show a significant difference, as in both groups 6-year-old children predominated (40.50% for girls and 43.30% for boys). In addition to the formalin-resorcinol method, biological methods with MTA and direct pulp capping were applied. The results show that the sample has a relative share of pulpitis of teeth 64 - 16.42% (upper first temporary molars on the left) followed by temporary teeth 74 - 14.93% and 54 and 65 (13.43%). When performing the comparative analysis between age and endodontic treatments of the dentition, a statistically significant difference was found (χ2 = 28.92 p < 0.05). In 4 and 5 year olds the relative share of endodontic treatment of teeth 64 prevails (respectively 21.10% for 4 years and 15.00% for 5 years) while in 6 year olds these are teeth 65 (21.40%). The most commonly used method for endodontic treatment of pulpitis of primary teeth is the mortal pulpotomy with formalin - resorcinol method (76.10%), and the least commonly used is the method of direct pulp coating (3.00%). The highest relative share have children with 2 endodontic treatments on average for temporary dentition (46.30%), followed by one treatment on average in dentition (22.40%). On average, 2.25 ± 1.39 endodontic treatments were performed per child, with a maximum of 8 endodontic treatments in the dentition. The average frequency of pulpitis of primary teeth in one child is 1.55 ± 0.93 as the minimum number is one developed pulpitis and the maximum is 5 pulpitis for the total number of teeth of the dentition.

The children with one pulpitis of a primary tooth out of all teeth in the dentition have the highest frequency in the temporary dentition (56.70%). Two of the children were diagnosed with 5 pulpitis inflamed teeth out of the total number of temporary teeth - 20 in number. In 82.10% (n = 55) of the examined children no complications were diagnosed after the endodontic treatments. The most commonly used method for endodontic treatment of inflammation of the pulp of primary teeth is pulpotomy with formalin-resorcinol (76.10% of all cases). The method of direct pulp capping is applied the least (3.00% of all cases). Based on the data obtained from the outpatient diaries and medical records of the patients, the complications after the endodontic therapy were established. The least degree of complications is associated with the formalin-resorcinol pulpotomy method.

In conclusion, complete endodontic therapy with the methods of extirpation of the root canals of the teeth can often be avoided, especially in mixed and permanent dentition for children over 7-8 years of age.

1. **FULL-TEXT PUBLICATIONS IN SCIENTIFIC JOURNALS, arranged in chronological order 37 copies (abstract of publications are not included, a total of 11 copies from the list, as they are presented in defense of Educational and Scientific Degree "Doctor" and Competition for Academic position Chief Assistant")**
2. **Damyanova DM. Microtomography of deciduous teeth enamel. Int. Journal of Engineering Research and Applications. ISSN 2248-9622. 2016 May; 6,5(5):68-70.**

**Purpose:** To develop an in vitro model of de- and re-mineralization with an etching gel (i-Gel) and with a mineralization varnish - Clinpro ™ White Varnish with TCP (3M). **Methods:** The material used is from 20 temporary intact teeth. They are first applied throughe preparation of the smooth temporary enamel surfaces with a 30 second demineralization with 37% phosphoric acid (i - gel - etching gel). Then the samples are washed and dried with water and airflow. Demineralized surfaces of the temporary teeth go through a remineralization with application of varnish - Clinpro ™ White Varnish with TCP. The measurement was done with a desktop X-ray microtomography scanner SkyScan 1272 produced by the company Bruker. **Results:** Representative images of the observed tooth sample. The outer surface of the tooth on which there are visible specific roughness. Clearly differed are two areas; a light one, which is on the outside – the tooth enamel, and a darker one – from the inner side of the tooth – dentin. These two areas are visible on all transverse (software) sections. The enamel thickness of a test sample varies between 300 and 500 μm. There are noticeable defects on the tooth enamel, which represent dark areas, i.e. areas of reduced density. Such areas in the depth of the enamel are presented and clearly shows their volumetric nature. Monitoring of the area with "damage" of dental caries, i.e. darker areas of enamel show that the larger of the two, which is located closer to the tooth surface in fact does not go out of it. It is covered by a layer with a thickness between 10 and 14 μm, whose density is very close, and perhaps a bit higher than that of tooth enamel. **Conclusions:** 1. CT has observations that result in such a direction that the tooth surface is uneven as there are areas with varying degrees of unevenness. In the uneven areas, their height, potentially that of the crystals from remineralizing coverage, is between 6 and 14 μm, with a horizontal size 14-40 μm. 2. In the tooth enamel monitor an area is observed that is "sealed" with a layer of a density close to that of healthy dental enamel and a thickness of 10-14 μm. In cutting of a sample such layer has also emerged on its surface. This leads to the hypothesis of the presence of the enamel coating layer whose density is very similar to that of the enamel.

1. **Damyanova D, Angelova S, Targova-Dimitrova T. Clinical Study Remineralization Effect of Mineralization Varnish. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2016 August; 15,8(4):134-136.**

**Introduction:** Several studies point out that dental products, such as fluoride varnishes, are able to promote remineralization and to control the development of the carious process. **Purpose:** To evaluate the effectiveness of fluoropolymers varnishes used for prophylaxis and non-invasive treatment of initial caries d1, d2 in children 4 to 6 years. **Material and Methods:** Non-invasive treatment of lesions d1a, d1b and d2. After processing results and highlights of the actual study was conducted by the data processing package for mathematical and statistical analysis SPSS v 20.0. **Results:** In a 4-year-olds observed at (2.7 times higher), and the average lesion before treatment was 11,35 ±2,41 (t = 12,43, p <0.001). At 5 and 6–year-olds difference before and after treatment was 2.6 times the average value of the lesions prior to

treatment with 5 year is 11,25 ± 2,47, and at 6-year was 11,15 ± 2,23 (respectively t = 12,01, p <0,001 for 5 years and t = 12,93, p <0,001 for 6 years). **Conclusion:** Clinpro ™ White Varnish with TCP (Tri-Calcium phosphate) (3M) is effective in reducing demineralization in subsurface layer.

1. **Damyanova D, Angelova S, Targova T, Ivanova K. The Role of Fluoride Varnishes for Caries Control in Children from 3 to 6 Years of Age. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2016 Sept; 15,9(8):88-91.**

**Background:** Topical fluoride varnishes have been widely applied as a non-operative method of caries prevention for more than three decades. The aim of this study was to estimate the effectiveness of non-invasive treatment of dental caries as an item of a program for prevention of dental caries in deciduous teeth. **Material and Methods:** We included 100 patients from 3 to 6 years of age in controlled clinical trials comparing the usage of fluorine varnish-Clinpro™ White Varnish with TCP (Tri-Calcium phosphate) (3M) applied for one year period. The control group of the same age included 100 children with no operative treatment or fluorine supplements application. The duration of the study was 12 months. Fluoride varnish was applied on carious lesions - d1a and d1b, diagnosed with DIAGNOdent Pen, on smooth surfaces of temporary teeth. In statistical data processing is implemented parametric theory of assessment of statistical hypotheses by comparing the relative values of the two samples. **Results:** For the experimental group the index of caries activity equals to 1.19%. Epidemiology of dental caries in persons equals to 88% in the experimental group. Fluoride varnish clinical application reduces the level of decay risk on smooth tooth surfaces with 49.79% after a 12 months period of application. **Conclusion:** Based on the facilities of advanced laser techniques we can assess the efficiency of fluorine varnishes application.

1. **Damyanova Dobrinka. Risk assessment for caries development from 3 to 6 years. Varna Medical Forum. ISSN 2367-5519. 2017; 6(1):135-138.**

Introduction: Behavior correction helps to self-control the oral environment and prevent the development of carious lesions. Objective: Risk assessment of some of the risk factors (saliva and oral hygiene).

Material and methods: Subject of research - the risk of caries of primary teeth. The subject of the study are children aged 3 to 6 years. The study is conducted at the Faculty of Dental Medicine, MU-Varna. To assess the risk of carbohydrate nutrition, parents of 30 of the children are assigned to keep a "Food Diary" for a period of 7-10 days. Children are examined with a history and detailed registration of clinical status.

The assessment is also obtained with the help of the test "GC Saliva - Check Mutans" following exactly the test methodology. The children from the experimental group (30) suffer from caries and have obstructions placed up to the research stage. We set ourselves the task in this study to analyze the degree of some risk factors present in children aged 3 to 6 years and to compare them with the control group of children (30) who do not suffer from caries. Results: Studies show that the difference between the two groups in the frequency of carbohydrate intake is significant. Reversible active carious lesions mean that the oral environment of the primary teeth is highly cariogenic. Oral hygiene is a high risk factor for the development of initial dental caries in a large number of children studied. The analysis of the data for the assessment of the cariogenic microflora from the microbiological studies showed that almost 100% of the children in the experimental group (patients and treated with caries) have a high microbial count of Streptococcus Mutans and a high risk of caries, between 3 and 6 years of age. Conclusions: 1. Risk assessment is an easy and accessible task for clinical performance. 2. The development of detailed data for each clinical case of a child from the risk assessment, diagnosis, differential diagnosis and the final diagnosis provides us with the exact treatment plan for each patient.

1. **Damyanova Dobrinka. Clinical and statistical study of caries of temporary teeth in children from 4 to 6 years. Varna Medical Forum. ISSN 2367-5519. 2017 Jun; 6(2): 112-115.**

Introduction: The prevalence and extent of dental caries have decreased significantly since the late 1970s in many countries. However, tooth decay is becoming an increasing problem for preschool children.

Early caries damage is below the surface with a superficial white lesion d1 and demineralization to enamel precavitation. Objective: Clinical and statistical study of caries of primary teeth in 4 to 6-year-old children, calculating the frequency of dental caries on teeth and surfaces. Material and methods: Subject of research - diagnosis and treatment of dental caries of primary teeth. Object of research - dental caries in children from 4 to 6 years. Criteria for inclusion of children: From 4 to 6 years old children - healthy, accompanied and cared for by parents, without systemic, gingival and mucosal diseases. Observation units: primary teeth, dft, dfs, active and inactive carious lesions at level d1, d2, d3 + d4. The study is conducted at the Faculty of Dental Medicine - Varna. The study is authorized by the Commission on Ethics of Research at MU-Varna. For statistical analysis of the data a specialized package for statistical analyzes STATISTICA 10.0 was used. Results: The average incidence of caries in different age groups shows that the highest incidence of caries are children aged 6 years (dmft = 6.01). The results of the study of caries on surfaces show that caries on 1 and 2 surfaces predominate (23.75%). Conclusions: 1. The dynamics of the epidemic marks a gradual increase with age. 2. The contingent is dominated by reversible lesions, any age of 4, 5 or 6 years is suitable for non-invasive treatment. 3. The frequency of initial carious lesions is higher than the frequency of cavited carious lesions and increases with age.

1. **Damyanova Dobrinka, Bozukov Hr. Evaluation of Standard Risk Factors for the Development of Dental Caries. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2017 April; 16,4(V): 87-90.**

**Background:** Caries progression or reversal of the process depends on the balance between demineralization and re-mineralization. "Caries balance" is determined by the relative weight of the sum of pathological risk factors and the sum of protective factors. **Objective** to identify the main risk factors for caries of temporary teeth acting in the studied group of children through a survey of their parents. **Material and Methods:** Parents of children from the town Varna and Varna region. Displacement Monitoring 100 persons. Units of observation: Patients 3 to 6 years with a need for prevention and treatment of dental caries temporary dentition. Methodology: Direct individual anonymous questionnaire completed by the parents of patients in dental practices in the city of Varna, University Medical Dental Center Varna- and clinical halls of Faculty of Dental Medicine – Varna, Bulgaria. **Results:** Children 81.0% with dmft> 1. All 81.0% have tested emerging active primary carious lesions d1 and d2 during the last year. Our results show that the worst risk factors for the development of caries in that age group had increased amounts of Str. Mutans, which found in 85.0% of children. In our study the prevalence of caries is high. **Conclusion:** The analysis in our study proves the strong influence of the carbohydrate diet and poor oral hygiene with the development and progression of carious process in the mixed dentition. Of all the factors we examined found that children have a high risk for dental caries.

1. **Damyanova Dobrinka. Reporting Caries in the Stage of Destruction - d3mft/s+d4mft/s. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2017 June; 16, 6(VII): 93-96.**

**Background:** Dental caries is one of the most common oral diseases affecting people of all ages. According to modern understanding of caries disease, tooth decay is defined as a process on setting long before one reaches a clinically detectable lesion that is just one of the symptoms. Like any process, caries can be controlled, regulated and modeled by creating suitable conditions in oral environment. **Objective:** To conduct an epidemiological study on the prevalence of caries d3mft/s+d4mft/s of temporary teeth, depending on the overall tooth decay in two group children. **Material and Methods:** Epidemiology of dental caries of temporary teeth and teeth surfaces - dmft and dmfs and frequency. **Results:** We found a statistically significant difference between the two study groups / criterion: P< 0.05/. The children in the treated group had a higher average number of cavitated caries lesions d3 + d4 of their temporary teeth (d3mft/s+d4mft/s= 3.81) compared to the control group children (d3mft/s+d4mft/s = 2.96) who were not treated by us operatively and non-invasively. **Conclusion:** With age advancing there increases the number of active lesions, as lighter ones turn into heavier (d1a in d1b), d1 to d2, d2 to d3. The operative technique for cavitated lesions of temporary teeth is minimally invasive cavity preparation.

1. **Damyanova Dobrinka. Evaluation of the effect of mineralization varnish on the progression of d1 and d2 enamel carious lesions in temporary dentition. Varna Medical Forum. ISSN 2367-5519. 2017 July; 6(2): 126-130.**

Introduction: White varnish 3M ESRE Clinpro TM WHITE Varnish with TCP (CV) is a varnish containing fluorides intended for application on enamel for prevention of early lesions. Recommended by the American Academy of Pediatric Dentistry- AAPD, is approved by the American Dental Association ADA. The aim of this study was to evaluate the effect of mineralizing, fluoride varnish on the progression of d1 and d2 enamel caries lesions in the temporary dentition. Material and methods: Object of observation: dental caries with diagnosis d1 and d2. Units of observation: children at high risk of caries: a group of 100 children treated with mineralizing varnish CV; control group of 100 children; carious teeth with threshold d1, d2 lesions; carious surfaces with d1, d2 lesions. Two hundred children from 3 to 6 years of age attending a clinical practice at the University Medical Dental Center - Varna were included in two groups with application of fluoride varnish and a control group. Children are at high risk of developing tooth decay. The probants were divided into two groups of 100 children. The first group is the one treated by us to which we apply mineralizing varnish CV (Clinpro ™ White Varnish with TCP - Tri-Calcium phosphate) (3M). The children in the group were treated with the mineralizing fluorine varnish by applications. The reading of the values of the lesions of the initial caries was performed with DIAGNOdent Pen to make the experiment accurate. Results: The results of the comparative analysis of the study show a statistically significant difference in the change of carious lesions d1 and d2 from active to inactive lesions (p< 0.001) and in children with applied treatment with Clinpro (CV) varnish better results were observed (25.0%). Conclusion: The results show that the applied fluorine mineralizing varnish is effective for prevention and treatment of active d1a, d1b and single cavitated d2 enamel lesions of primary teeth.

1. **Damyanova Dobrinka, Sabeva El, Miteva-Hristova M. Invasive Treatment of Caries with General Anesthesia – A Case Report. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2017 July; 16, 7(III): 70-73.**

**Background:** Despite an overall caries decline in children, still 50-60% of carious primary teeth of 6-year-olds remain untreated, in 3-year-olds 13%. There are an increasing number of poli-caries patients with insufficiently treated primary teeth. Therefore, early treatment is fundamental. The goal is to treat caries and inflammation of the dental pulp in one visit to the day's surgery of the child by applying analgesia with general and local anesthesia. **Case Report:** A child, a boy of 5 years complains of severe periodic toothache 65 was brought by his parents for examination and treatment at the University Medical Dental Center of the Faculty of Dental Medicine, Varna, Bulgaria. The child suffers from systemic medical condition Bronchial asthma. It is directed for pediatric dentistry treatment by a pediatrician from the University Hospital "St. Marina", Varna. The treatment was conducted on general anesthesia with nasotracheal intubation and sedation of the child in the operation of the University Medical Dental Center at the Faculty of Dental Medicine, Varna. **Conclusion:** The operative technique for cavitated lesions of temporary teeth is minimally invasive cavity preparation. The fillings must be of modern adhesive restorative dental materials.

1. **Damyanova Dobrinka, Sabeva El, Miteva-Hristova M. Dependence of Cavity Caries Lesions and OHI-S on Children Аged 4 to 6 Years. Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2017 July;16,7(V): 79-82.**

**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 thestudy – 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 croup 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.

1. **Damyanova Dobrinka. Scanner SkyScan Microtomography With Temporary Teeth. Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2017 July;16,7(VI): 92-95.**

**Purpose:** To monitor the changes in tooth enamel morphology under in vitro conditions after caries development and its treatment with a mineralization varnish - Clinpro ™ White Varnish with TCP (3M). **Methods:** The material used is from 20 temporary teeth. Treatment caries with remineralization with application of varnish - Clinpro ™ White Varnish with TCP. The measurement was done with a desktop X-ray microtomography scanner SkyScan 1272 produced by the company Bruker. The experiment is conducted and captured six examiners from the Institute of Physical Chemistry ,, Academic Rostislav Kaishev "of the Bulgarian Academy of Sciences in the city Sofia. **Results:** Clearly differed are two areas; a lighter one, i. e. denser, which is on the outside – the tooth enamel, and a darker one – from the inner side of the tooth – dentin. These two areas are visible on all transverse (software) sections. The enamel thickness of a test sample varies between 300 and 500 μm. Monitoring of the area with dental caries, darker areas of enamel. **Conclusion:** CT has observations that result in such a direction that the tooth surface is uneven as there are areas with varying degrees of unevenness.

1. **Damyanova Dobrinka, Sabeva El, Miteva-Hristova M. Treatment After Illness of Early Childhood Caries - Clinical Case Report. Quest Journals Journal of Medical and Dental Science Research. ISSN 2394-0751. 2017 August; 4(5): 79-82.**

**Background:** Children with “atypical”, “progressive”, or “rampant” patterns of dental caries (described separately for each age group): < 3 years: any sign of dental caries in smooth surfaces 3–5 years: one or more cavitated, missing (due to caries), or filled smooth surfaces in maxillary teeth or a dmfs score of 4, 5, and 6 surfaces for ages 3, 4, and 5 years. **Case Report:** A child, a girl of 3 years complains of severe periodic toothache 61 was brought by his parents for examination and treatment at the University Medical Dental Center of the Faculty of Dental Medicine, Varna, Bulgaria. The patient has suffered of early childhood caries stage II. The child not systemic medical condition. It is directed for pediatric dentistry treatment by a pediatrician from the Varna. The treatment was conducted on local anesthesia with the clinic of the University Medical Dental Center at the Faculty of Dental Medicine, Varna. **Conclusions:** 1. Secondary prophylaxis should begin as early as possible after childbirth or about 4-6 months after delivery. **2.** Children who have suffered from ECC should be treated by minimally invasive cavity preparation with preventive fillings for temporary teeth. **3.** The restorations for temporary teeth are made of modern fluoride-emitting adhesives as compomers. If resin-modified GIC(Cements) are applied, it is necessary to observe the filling made to the physiological breakdown of the permanent tooth and the extraction of the temporary tooth.

1. **Damyanova Dobrinka, Ivanova K. Comparative Analysis of Caries Lesions of Two Groups of Children by Clinical Examination with Laser Fluorescence. Journal of Dental and Medical Sciences (IOSR-JDMS). ISSN 2279-0853. 2017 August; 16,8(IV): 01-06.**

**Background:** Varnish, when brushed onto the teeth, provides a highly concentrated dose of fluoride and

maintains prolonged contact with enamel to inhibit caries. **Objective:** Our study aims to evaluate the effect of mineralizing fluorine varnish on the progression of initial caries of enamel in temporary dentition by laser fluorescence. **Material and Methods:** Object of observation. 1 group - 100 children aged 3, 4, 5 and 6 years treated with Clinpro ™ White Varnish with TCP (Tri-Calcium phosphate) (3M) – CV. Two groups - 100 children aged 3, 4, 5 and 6 years without treatment with varnish CV. Location of the study - University Medical Dental Center Varna, Clinical Halls for Children's Dentistry, Faculty of Dental Medicine – Varna. Units of observation: Temporary teeth, Caries lesions at level d1 and d2. After processing the results and determination of the highlights was conducted by actual survey data processing package for mathematical and statistical analysis SPSS v 20.0. **Results:** A significant difference was found between the average lesion scores in the control and experimental groups after treatment with CV (t = 4.206, p = 0.001), whereas the children in the experimental group had a significant reduction in the lesions of the temporary central incisors. In the four-year-old children, we found a significant difference between the mean values of the treated children before and after non-invasive treatment with CV (t = 2.043, p < 0.01). The analysis of temporal canine lesion values in four-year-old children showed a

significant difference between both the control group and the pretreatment group (t = 2.357, p = 0.001).

**Conclusion:** 1. After the first week, DIAGNOdent pen scores improved from less than three steps for d1b and d2 lesions and improved by two steps for d1a lesions. 2. Increased therapeutic efficacy of dental agents for noninvasive treatment is achieved by enhancing them with fluorides.

1. **Damyanova Dobrinka, Ivanova K. Clinical Characteristics of Caries Lesions d1 and d2 After Non-invasive Treatment with Varnish. Quest Journals Journal of Medical and Dental Science Research. ISSN 2394-0751. 2017 August; 4(7): 01-04.**

**Background:** Suitable for non-operative / non-invasive treatment are the majority of caries pathology in childhood - reversible caries lesions reported with new index systems / diagnostic threshold, activity indices and caries lesion reversibility indexes / at the earliest possible stage. From their appearance, including primary dentition. **Objective:** Assess the effectiveness of remineralization of Clinpro White Varnish applied to reversible, active caries lesions and surfaces by diagnosis based on laser fluorescence. **Material and Methods:** Subject of the monitoring are 200 children from Varna, aged 3 to 6 years, divided equally in age standardized groups with an equal number of boys and girls. Criteria for inclusion of children: clinically healthy, without general and systemic diseases without gingival and oral mucosal diseases; accompanied by their parents, regularly visiting our ambulatory room. Patients were divided into two groups of 100 children.

Methodology: Aplications with varnish are at the beginning of treatment, and replications every 3 months - for a period of one year. The children are randomly selected to visit the Clinical Halls of the Faculty of Dental Medicine, Varna for prevention and treatment. **Results:** Comparing the groups of children on healthy enamel surfaces / d1 caries lesions t = 2,869, p< 0,05 we found a statistically significant difference. When comparing the groups of children on healthy enamel surfaces / d2 caries lesions t = 9,494, p< 0,05 we found a statistically significant difference. When comparing the groups of children with caries lesions d1 / d2 (t = 2.456, p> 0.05) we did not detect a statistically significant difference. **Conclusion:** After the first week, DIAGNOdent pen scores decrease from the baseline to less than three degrees for d1b and d2 and decrease by two degrees for d1a lesions.

1. **Damyanova D, Georgieva I, Ivanova K. Determination of Oral Hygiene Status (OHIs) of Two Groups of Children and Comparison With Caries Incidence of Temporary Teeth and Age. AJER American journal of Engineering Research. E-ISSN 2320-0847, p-ISSN 2320-0936. 2017 October; 6 (10):130-135.**

**Objective:** Enamel demineralization can be improved by controlling plaque microbial biofilm, dietary modification and fluoride. On the surface of the tooth, demineralization is the first sign of the carious lesion. The lesion, which is limited to the enamel, does not require a restoration, except in the cases of fracture after deepening and cavities present. **Material and Methods:** Object of observation - there are 300 children from the city of Varna, aged 4 to 6 years, distributed equally in standardized age groups, with the same number of boys and girls. The study was carried out in the Faculty of Dental Medicine, Varna, 2015-2016, with the permission of the University's Scientific Ethics Committee, with informed consent from each parent. The selection of children is random. Surveillance Authorities: PhD student specialized in pediatric dentistry. All carious (d), missing (m) and filling teeth (f), are recorded. Registration of data: in the statistical maps. To determine the level of oral hygiene, a Greene-Vermilion Oral Hygiene Index (OHIs) was used. The presence of plaque after staining on the corresponding surfaces of the representative teeth was recorded. Statistical Data Processing Methods - StatSoft, Inc., STATISTICA Manual (Data Analysis Software System), Version 10.0, 2010. **Results:** The average of OHI-S for the entire sample is 1.07 ± 0.67. The presence of increasing linear dependence (b = 1.501911> 0) is established, with increasing OHIs, the values of the dmft index also increase. The resulting logarithmic dmft dependence on OHIs is dmft = 3,759 + 3,6789 \* log10(OHIs). To prove the dependence of the dmft values of OHI-S and age, as the dmft values are integer, we applied Poisson regression. **Conclusion:** With increasing OHIs, the values of the dmft index also increase. The resulting p-levels for the two explanatory variables are less than 0.05, indicating that the variable dmft is also dependent on the OHIs and age factors.

1. **Damyanova Dobrinka, Angelova S. Comparative Analysis Between Age and Endodontic Treatment of The Temporal Dentition. Quest Journals Journal of Medical and Dental Science Research. ISSN 2394-0751. 2017 October 27; 4(8):06-10.**

**Background:** In case of exacerbation of chronic pulpitis of temporary tooth, the processes pass extremely fast from one phase to another. Pulpitis chr. fibrosa - under carious dentin we establish communication with the pulp. Pulpitis chr. ulcerosa has available communication with the pulp, also occurs directly with careful drilling. **Objective:** Perform a comparative analysis between age and endodontic treatments of temporary dentition. **Material and Methods:** Children 67, 37 girls and 30 boys, mean age 5.1 ± 0.8 years, minimum age 4 years, maximum age 6 years with a prevailing share of 6-year-olds were studied. Time and place of observation: The study was carried out in the Faculty of Dental Medicine, Varna, 2015-2017, with the permission of the University Scientific Research Committee, with informed consent from each parent. The selection of children is random. Surveillance Authorities: PhD student specialized in pediatric dentistry. Registration of data: in the statistical maps. After processing the results and determination of the highlights was conducted by actual survey data processing package for mathematical and statistical analysis SPSS v 20.0. **Results:** When performing the comparative analysis between age and the one-on-one treatments of the dentition, we found a statistically significant difference (χ2 = 28.92 p< 0.05). At the age of 4 and 5, the relative share of endodontic treatment of teeth 64 (21.10% for 4 years and 15.00% for 5 years) prevailed, while in 6 years, the teeth were 65 (21.40%). Of the two children studied, no endodontic treatment has been performed. Children with 2 endodontic treatments have the highest relative share on average for temporary dentition (46.30%), followed by one treatment average in the dentition (22.40%). **Conclusion:** 1. We found a statistically significant difference between age and endodontic treatments of the dentition of the tested children. 2. At the age of 4 and 5, the relative share of endodontic treatment of teeth 64 is prevalent, whereas in 6 years these are the teeth 65. 3. On average, one child was treated with 2.25 ± 1.39 endodontic treatments, with as many as 8 endodontic treatments in the dentition.

1. **DamyanovaD, AngelovaS, Andreeva-BorisovaR, DimovaE. Relative Ratios of Methods Applied for Endodontic Treatment of Primary Teeth. Quest Journals Journal of Medical and Dental Science Research. ISSN 2394-0751. 2017 November 22; 4(8):29-32.**

**Background:** Endodontic therapy in cases of emergency aims to overcome pain and control inflammatory

processes. It has been scientifically established that approximately 90% of the patients of child’s age, seeking for urgent dental cares, are affected by symptoms of pulp or periodontal diseases.There are various therapeutic methods appropriate for primary teeth. Basicall they are divided into two groups of mortal and vital endodontic methods. **Objective:** Determination of the relative ratios of methods applied for endodontic treatment of primary teeth and establishment of complications. **Material and Methods:** Subjectofthestudyare 67 children. The research has been carried out at the Faculty of Dental Medicine, Medical University-Varna, in the period 2015-2017. The researchers are specialists at Pediatric Dentistry.

**Diagnostic scale - codes:** d4 - dentinal lesion with pulp involvement; Irreversible caries lesions - d4. Both types of endodontic methods, mortal and vital, were used. Besides the mortal method of formalin-resorcin, vital methods of MTA and direct pulp capping were applied. On the basis of data obtained from ambulatory journals and patients’ medical cards we accentuate on establishment of complications after endodontic therapy has already been performed. After processing the results and determination of the highlights was conducted by actual survey data processing package for mathematical and statistical analysis SPSS v 20.0. **Results:** The most often applied method of endodontic treatment of pulpitis in primary teeth is the formalinresorcin procedure concerning 76,10% of all the clinical cases. At least applied is the method of direct pulp capping, established in 3,00 % of all the records. A number of 55 of these children (82,10% of them) are characterized with no complications after endodontic treatment.

**Conclusion:** 1. The most often applied method of endodontic treatment of pulp inflammation of primary teeth is the formaline-reorcin method (76.10% of all the cases). 2. At least applied is the method of direct pulp capping (3.00% of all the cases). 3. The smallest degree of complications is related with the formalin-resorcin method.

1. **Damyanova Dobrinka. Behavioral and Socio-Demographic Risk Factors for the Development of Dental Caries in Children from 3 to 6 Years. Varna Medical Forum. ISSN 2367-5519. 2018; 7(1): 103-107.**

Introduction: Risk profile is a general concept involving different ways of assessing oral health. It can be done on several levels: sociall or in groups for a given population; individuall; topicall for certain teeth.

Objective: To identify the main risk factors for caries of primary teeth acting in the studied group of children through a survey of their parents. Material and methods: Assessment of standard risk factors for the development of dental caries. Assessment of the individual specific risk factors of each child. Object of observation: parents of children from Varna and Varna region. The volume of observation is 100 people. Units of observation: patients from 3 to 6 years with the need for prevention and treatment of dental caries of the primary dentition. We determined the correlation between OHI-S, risk, age and dmft in primary teeth - Pearson Correlation index. After processing the results and determining the accents, the actual research was conducted by processing the data with a package for mathematical and statistical processing SPSS v.20.0. Results: The presence of cariogenic plaque biofilm covering the primary teeth and surfaces was found in 100% of the children included in the study. From the behavioral factors moderate to strong influence on the development of caries have the frequency of brushing (r = -0.44, p< 0.001) and the use of carbohydrate (sugar) foods and beverages (r = 0, 51 p< 0.001). Of the socio-demographic factors, only the social status shows an inversely moderate dependence with the risk of caries development (r = - 0.39 p< 0.001). The lower the parents' education, the greater the risk of developing tooth decay. Conclusion: The analysis in our study proves the strong influence of carbohydrate nutrition and poor oral hygiene on the development and progression of the carious process in the primary dentition. Of all the factors studied, we found that children have a high risk of dental caries.

1. **Damyanova Dobrinka. Protective Factors of the Development of Dental Caries for Children from 3 to 6 Years of age. Varna Medical Forum. ISSN 2367-5519. 2018; 7(1): 108-111.**

Introduction: The protective factors are: optimal fluoride prophylaxis; good oral hygiene; protective properties of saliva; proper and complete nutrition; regular preventive examinations twice a year.

Objective: To establish the main protective factors against caries of primary teeth acting in the studied group of children through a survey of their parents. Material and methods: Evaluation of the standard protective factors against the development of dental caries. Assessment of the individual specific protective factors of each child. Object of observation: parents of children from Varna and Varna region. The volume of observation is 100 people. Units of observation: patients from 3 to 6 years with the need for prevention and treatment of dental caries of the primary dentition. After processing the results and determining the accents, the actual research was conducted by processing the data with a package for mathematical and statistical processing SPSS v.20.0. Results: Respondents indicate that their children use fluoride toothpaste for their age (6.30%) and exercise parental control over hygiene and its conduct (9.50%). Proven and high risk factor is the optimal endogenous fluoride prophylaxis. Only 37.50% of children are low risk. Only 10.0% of the examined children have professional local fluoride prophylaxis and non-invasive treatment in clinical conditions. For 93.60% of the surveyed children, the frequency of brushing during the day is more of a risk factor. Prophylactic examinations are performed only once a year by the parents in 97.30% of the covered children. Conclusions: We found a statistically significant difference between the respondents in terms of opinion formation and behavior regarding the main issues related to prevention, oral hygiene, preventive and non-invasive treatment of caries of primary teeth.

1. **DamyanovaD, Dimova E. Contemporary Restorative Treatment of Dental Caries with Preventive Fillings -A Case Report. Quest Journals Journal of Medical and Dental Science Research. ISSN 2394-0751. 2018 March 20; 5(2):08-11.**

**ABSTRACT: Background:** The strength and esthetic properties of the resin-based nanocomposite tested

should allow the clinician to use it for both anterior and posterior restorations. **Case Report:** A child, a boy of 10 years, who complains of severe periodical toothache 36 was brought by his parents for examination and treatment at the University Medical Dental Center of the Faculty of Dental Medicine, Varna, Bulgaria. The child doesn`tsuffers from systemic diseases. It is directed for pediatric dentistry

treatment by a pediatrician from the clinic in Varna, Bulgaria. The treatment was conducted on local anesthesia of the child in the clinic of the University Medical Dental Center at the Faculty of Dental Medicine, Varna, Bulgaria. The study is realized in the Faculty of Dental Medicine of Varna. Study period 2016-2017 years. The study is authorized by the Scientific Research Ethics Commission at Varna Medical University andinformedconsentofeachparent. **Conclusion:** The operative technique for cavitated lesions of permanent teeth is minimally invasive cavity preparation. The fillings must be of contemporary adhesive restorative dental materials with preventive qualities.

1. **Dobrinka Damyanova, Elena Dimova. Correlation Analysis Between OHI-S and PBI-S Ainamo and Bay in Children Aged 6 Years. Dental Research and Oral Health. ISSN: 2641-7413. 2018 April 12; 1:001-006. DOI: 10.26502/droh.004**

**Introduction:** When assessing the oral or hygienic status of a group, community, or population, different

assessment systems are used to choose specific teeth and surfaces. A total numerical expression of the hygienic state is calculated and the digital index is called an oral hygiene index. The aim of the study is to describe the relationship between OHI-S and PBI-S in childhood. **Material and Methods:** Object of observation. The study is about the oral hygiene status of 60 children aged 6 years. Oral-Hygiene Index, OHI-S Greene and Vermillion (PI / 6 + CI / 6) - (Modified) is used to establish Oral Hygiene status. The research also includes the condition of the gingiva by evaluating the Papilla Bleeding Index (PBI-S) - Ainamo and Bay. Location of the study: University Medical Dental Center Varna, Faculty of Dental

Medicine. After processing the results and determination of the highlights was conducted by actual survey data processing package for mathematical and statistical analysis SPSS v 20.0. **Results**: Comparison of OHI-S results according to PBI showed the presence of a statistically significant difference (F = 34.63; p < 0.001), with a tendency for OHI-S to increase with an increase in the percentage of PBI-S. In examining the relationship between OHI-S and PBI, an extremely strong direct correlation was found (r = 0.923; p < 0.01). **Conclusion:** 1. PBI correlation analysis of OHI-S results showed a statistically significant difference. 2. The average value of OHI-S increases with an increase in the percentage of PBI-S.

1. **Damyanova Dobrinka. Irreversible Pulpitis of Primary Teeth. Varna Medical Forum. ISSN 2367-5519. 2018; 7(2): 133-140.**

Acute inflammation of the pulp begins with a slowing of blood flow in the area of irritation with the presence of agglutination of red blood cells - erythrocytes in the middle of blood vessels and accumulation of polymorphonuclear leukocytes. Under the action of chemo-toxic factors, leukocytes move to the area of inflammation. During disintegration, leukocytes select proteolytic enzymes in large quantities, as a result of which areas of purulent exudate appear in the pulp. Other bioactive aggressive substances affect the inflammation, as a result of which the permeability of the vessels increases. This is the mechanism of the cells leaving the blood circulation and plasma and from the bloodstream into the pulp tissue. The osmolarity increases, hypoxia and acidosis develop in the pulp of the tooth. The described process predetermines the development of inflammation, irritation of the nerve endings and causes spontaneous pain.

1. **Damyanova D, Georgieva I, Marinov T. Comparison of the Efficiency of brushes Dr. Barmans toothbrushes for dental plaque biofilm control for 6-year-old. Varna Medical Forum. ISSN 2367-5519. 2018; 7(2): 141-147.**

Introduction: Dental plaque is an example of a microbial biofilm with a microbial composition. Aim: To assess the condition of the initial oral hygiene in children aged 6 years and to compare it with their oral hygiene condition after performing individual oral hygiene using the brushes of Dr. Barman, s compared to ordinary toothbrushes and dosed fluoride pastes according to the age of the children. Material and methods: The study included 200 children aged 6 years. Determining the level of oral hygiene. The oral hygiene indices OHI-S Greene & Vermillion and I. Silness, H. Loe (1967) are used to establish the oral hygiene status. The study is conducted at the Faculty of Dental Medicine, MU of Varna. Study period - 2016-2017. A prophylactic program is being developed. Results: The comparison of the results of the oral prophylaxis 0.98 to 0.79 showed that respectively the conventional brushes have better results in the studied group in comparison with the brushes of Dr. Barman,s. A decrease in OHI-S values ​​for 6-year-olds was found to be 1.22 to 0.43 for the Dr. Barman,s. brush group. In children in the control group at the age of 6 years, OHI-S decreased from 1.68 to 0.69. Conclusions: 1. In the control group of children aged 6 years, using conventional toothbrushes and toothpastes containing fluoride of 1450 ppm F, participants were evaluated with better hygiene results compared to the experimental group. 2. In children at high risk of caries, the prevention program should also optimize the diet. 3. Higher efficiency of plaque biofilm removal after individual oral hygiene was said by conventional brushes, followed by higher efficiency obtained by Dr. Barman,s brushes.

1. **Dobrinka Damyanova. Assessment of Distribution of Pulpitis in Primary Dentition. International Dental Journal (IDJ). Special Issue: Abstracts of the 106 th, FDI World Dental Congress. ISSN 0020-6539. 2018 September; 68 (Suppl. 2): 35. (Impact Factor 2.038)**

Aim or Purpose: Assessment of distribution of pulpitis in the primary dentition on an individual and community scale. Materials and Methods: Subject of the study are 67 children with primary dentition and performed minimum one endodontic treatment of a deciduous tooth. Totally 37 girls and 30 boys are

included into this research. Child’s minimal age equals to 4 and maximal age of participants is 6. The research has been carried out at the Faculty of Dental Medicine, Medical University-Varna, in the period 2015–2017. The researchers are specialists at Pediatric Dentistry. Irreversible caries lesions with pulp involvement, categorized as d4, have been investigated through this retrospective study based on medical records of participants. Actual survey data processing package for mathematical and statistical analysis

**SPSS v 20 was applied.** Results: Approximately half of all the children who have taken part in the research, namely 46, 30% are characterized with 2 endodontic treatment procedures performed. One clinical situation of endodontic therapy concerns 22, 40% of all the participants. Maximum 5 teeth affected by pulpitis have been recorded per individual primary dentition. Conclusions: The average value of the frequency of pulpitis equals to 1.55 ± 0.93 per child. The highest relative ratio of conducted

endodontic therapy in primary dentition, regarding 46.27% of all the participants included, amounts to 2 clinical cases of endodontic procedures. An average value of 2.25 ± 1.39 endodontic procedures

have been registered by a child.

1. **DamyanovaD, Andreeva-BorisovaR. Analysis of Therapeutic Efficacy of Clinically Applied Varnish. Dental Research and Oral Health. ISSN: 2641-7413. 2018 Sept 11; 1(2):022-028. DOI: 10.26502/droh.004**

**Purpose:** Our study aims to evaluate and analyze the effect of a mineralizing varnish on the progression of the initial caries of the enamel in the primary dentition. **Materials and methods:** Subject of observation - there are 200 children from the city of Varna, aged 3 to 6 years, distributed equally in standardized age groups, with the same number of boys and girls. Dental caries diagnosed with d1 and d2. *Units of observation:* Children with high caries risk of development: A group of 100 children treated with mineralizing varnish CV; Control group of 100 children. Carious teeth with threshold d1, d2 lesions. Carious surfaces with d1, d2 lesions. After processing the results and determining the highlights, the actual study was performed by processing the data with a mathematical-statistical processing package SPSS v 20.0. **Results:** The results of the comparative analysis of the therapeutic efficacy of the mineralizing varnish used-Clinpro White Varnish showed a significant difference in the percentage of effectiveness (t=- 3.68, p< 0.001). Clinpro White Varnish showed better results after the application (64.58%). **Conclusion:** The use of these medications may be beneficial for patients with dental caries of primary teeth from 3 to 6 years of age.

1. **Dobrinka Damyanova, S. Angelova, R. Andreeva-Borisova. Estimation of Pulpitis Prevalence in Primary Dentition. Dental Research and Oral Health. ISSN: 2641-7413. 2018 Oct. 25; 1(3):029-033. DOI: 10.26502/droh.005**

Objective: Assessment of distribution of pulpitis in primary dentition on an individual and community scale. Material and Methods: Subject of the study are 67 children with primary dentition and performed minimum one endodontic treatment of a deciduous tooth. Totally 37 girls and 30 boys are included into this research. Child‘s minimal age equals to four and maximum age of participants is six. The research has been carried out at the Faculty of Dental Medicine, Medical University “Prof. Dr. Paraskev Stoyanov”-Varna, in the period 2015-2017. The researchers are specialists at Pediatric Dentistry. Irreversible caries lesions with pulp involvement, categorized as D4, have been investigated through this retrospective study based on medical records of participants. Actual survey data processing package for mathematical and statistical analysis SPSS 20.0 was applied. Results: Approximately half of all the children who have taken part in the research, namely 46, 30 %, are characterized with two endodontic treatment procedures performed. One clinical situation of endodontic therapy concerns 22, 40 % of all the participants. Maximum five teeth affected by pulpitis have been recorded per individual primary dentition. Conclusion: Pulpitis is widely distributed in deciduous teeth.

1. **Dobrinka D, Halilova M. Investigaton of the DMFT (t) caries index in twins - clinical cases. Varna Medical Forum. ISSN 2367-5519. 2019;8(1):53-57.**

INTRODUCTION: Recent research provides new evidence for the link between genes and dental caries in twin children. Objective: To study and evaluate the DMFT (t) caries index, after a prophylactic examination of 4 pairs of twins aged 8 to 10 years. Material and Methods: The study observed dental caries and DMFT (t) caries index of 4 pairs of twins aged 8 to 10 years. Dental status is assessed and registered according to WHO criteria. Units of observation: primary and permanent teeth and surfaces with / without carious lesions active carious lesions at diagnostic threshold level d1a. Signs of observation: carious, obstructed or extracted due to caries primary or permanent tooth. The presence of at least one carious lesion / surface. Time and place of observation: The study is carried out at the Faculty of Dental Medicine of Varna in a clinical hall in 2017 - 2018 academic year. Prior informed consent has been obtained from each parent. The selection of children is random. Surveillance organs: the doctor,s a specialist in pediatric dentistry. Results and Discussion: The mean value of the caries index DMFT (t) of the studied pairs of twins is DMFT (t) = 2.625. The highest values ​​are the index for the last pair of twins, respectively for the first child of the pair DMFT (t) = 6 and for the second child DMFT (t) = 4.

Conclusions: 1. One of the twin children has a higher DMFT (t) index and a higher incidence of caries.

2. Those of the children from the twin couples with higher caries have a correspondingly high caries risk

1. **Dobrinka Damyanova. Assessment of the oral health status of twins - Clinical cases. Varna Medical Forum. ISSN 2367-5519. 2019;8(1):58-62.**

Introduction: In modern medicine, one of the most accurate methods for establishing variability in the characteristics of twins is the use of genetic research and the study of the interaction of genetic factors on the dental development of twins. Objective: To assess and compare the oral hygiene status in the studied and treated four pairs of twins aged 8 to 10 years. Material and methods: The study monitors the oral hygiene status of 4 pairs of twins aged 8 to 10 years (one male pair and 3 female pairs). The Greene-Vermillion Oral Hygiene Index (OHI-S) was used to determine the level of oral hygiene. The presence of plaque after staining on the respective surfaces of the representative teeth was reported. The Silness and Loe index determined the thickness and amount of plaque biofilm in the gingival third zone of the crowns of the examined teeth. The study is implemented at the Faculty of Dental Medicine in Varna in the 2017-2018 academic year. Prior informed consent has been obtained from each parent. The selection of children is random. The doctor is a specialist in pediatric dentistry. The results were processed using the statistical program SPSS v. 20.0 using variational and comparative analyzes. Results: The results of the analysis of the oral hygiene status show that the pairs of twins studied by us have satisfactory oral hygiene according to both indices. In terms of age, we found that twins under 10 years of age (8 and 9 years) have poorer oral hygiene than those at 10 years (p< 0.05). According to OHI Greene-Vermillion, the index is 1.53 ± 0.34 for twins over 10 years and 1.93 ± 0.27 for those under 10, respectively. The PLI Silness-Loe index is equal to 1.81 ± 0.53 for children under 10 years and 1.34 ± 0.21 for those over 10 years.

Conclusions: There was a significant difference in the oral hygiene indices between the twins aged 8 and 9, which shows that there is a difference in the established hygiene habits because they have the same genetic background.

1. **Dobrinka M. Damyanova. Severe Early Childhood Caries - A Clinical Case Report. Archives of Dentistry and Oral Health. ISSN 2638-4809. 2019;2(1):12-18.**

**Introduction:** The most common cause of general anesthesia for children up to 5 years of age in Bulgaria is caries of early childhood, followed by non-cooperative children due to the strong anxiety of dental treatment. Dental caries in the primary dentition of children aged 5 years and from 1 to 3 years are still one of the major health problems in the United States. The aim is to examine the severity of early childhood caries, their complications and the need for restoration. **Case Presentation:** On the dental chair is sitting a 3 years and 7 months old girl. Dental status showed that the teeth 51, 52, 61, 62 were diagnosed Fracture coronae dentis. Teeth 54, 64 were diagnosed Periodontitis chronica granulomatosa diffusa cum fistulae. Cavity (d3) and irreversible lesions are the teeth 53, 63, 81, 82. Deep and cavity caries of the occlusal fissure have teeth 65, 75, 84, 85. Teeth 55, 72, 74 have a diagnosis of symptomatic and open pulpitis (d4). The treatment was conducted on general and local anesthesia in the clinic of the University in Varna. Operators: Doctors, specialists in pediatric dentistry. **Discussion:** The patient have pain on palpation and percussion. The Silness and Loe plaque index is 2.33, which indicates poor oral hygiene. Diagnosis: Severe Early Childhood Caries. The child not systemic medical condition. The definition of severe early childhood caries (S-ECC) is any sign of smooth-surface caries in a child younger than three years of age, and from ages three through five, one or more cavitated, missing, or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing, or filled score of greater than or equal to four (age 3), greater than or equal to five (age 4), or greater than or equal to six (age 5). In this case primary teeth need a restoration, and in heavier cases and extraction. **Conclusion:** 1.Children who have suffered from ECC should be treated by minimally invasive cavity preparation with preventive fillings for primary teeth.2.The restorations for teeth are made of modern adhesives such as glass-ionomer cements and compomers.

1. **Dobrinka Damyanova, Siyana Atanasova. Analysis of the Restored Teeth in Children from Varna, Bulgaria, J Dent Res 98 (Spec Iss B): abstract number 52, IADR Southeast Asian Division Annual Meeting, ISSN: 0022-0345. Online ISSN: 1544-0591. 2019, (www.iadr.org). (Impact Factor 4.914)**

OBJECTIVES: The connection between caries and frequency of the restorations has not been proven. The aim was to analysis of the frequency and correlations of the restorations of primary and permanent child teeth. METHODS: A total of 602 children in Varna, aged 3-18 years were selected for this study. The patients have had treatment with restorative fillings (Riva SDI; Dyract R XP DENTSPLY; i-LIGHT N; i-SEAL LS). The children are divided into 16 groups according to age and evaluated with high caries risk. In order for the study to be precise for every patient a DMF(T+t) index has been made for every dentition. This is a retrospective study, based on medical data of the participants and it includes the frequency, relative share and correlations of the restorations of cavitated caries lesions in the dentine with or without pulp inflammation. Pearson's correlation and simple linear regression were used to estimate the correlation between restorations, DMF(T+t) and age. RESULTS: The estimated value of DMF(T+t) is 5.46±3.95. The direct ratio shows that with increase in age there is an increase in the number of PFC (preventive fillings with composites) r = 0.725 (p<0.001). The increase in age also shows a decrease in the use of glassionomer cements (r = -0.661, p<0.001) and compomers (r = -0.368, p<0.001). CONCLUSION: With the increase of the DMF(T+t) of the examined patients there is an increase of the number of PFC. Proving that with the increase of age for children, there is an increase of the number and frequency of the PFC in the groups. All authors declare no conflict of interest and no financial support to this study.

1. **Damyanova D, Dimitrova V. Turner,s hypoplasia in a 11-year-old child. A case report. Varna Medical Forum. ISSN 2367-5519. 2020;9(1):74-79.**

Introduction: Dysplasia dentales acquisita Turneri is classified as acquired dental dysplasia (Dysplasia dentales acquisitae). Turner dysplasia (Dysplasia Turneri) is a localized dysplasia of the teeth. One of the permanent teeth is most often affected, but it is possible that a group of adjacent permanent teeth may also be affected. Case description: The study was conducted in 2018/2019. Place of the study: The study is realized in the Faculty of Dental Medicine and Clinical Halls for Pediatric Dentistry, Varna, Bulgaria. In order to conduct the study, we received pre-declared informed consent from the parents, respectively for the patient, who is a child and is 11 years old. We diagnosed: Dysplasia dentales acquisita Turneri (Turner's dysplasia) on teeth 11, 12 and 21. Presence of hypoplastic and hypomineralized areas of the enamel of the occlusal 1/3 of the crowns of the permanent incisors affecting the cutting edges. With Hypodontia dentis is tooth 22. Discussion: Turner's hypoplasia is an anomaly found in the structure of permanent teeth. Its appearance is variable, although it usually manifests itself as part of a missing or reduced enamel on permanent teeth. Conclusion / clinical significance: Traumatic accident during childhood is the etiological reason for the development of Dysplasia dentales acquisita Turneri on permanent teeth 11, 12, 21. Enamel hypoplasia has different variations and research can be applied to draw conclusions and their family habits.

1. **Dobrinka Damyanova, Radosveta Andreeva – Borisova. Anomalies In Teeth Development – Gemini Teeth And Fusion - Two Clinical Cases. IJSRP International Journal of Scientific and Research Publications. ISSN 2250-3153. Apr. 2020; 10(4):40-44.**

Anomalies in tooth development are variations in the number, shape, size and structure of dental structures. First clinical case: A 6-year-old girl attends the Department of Pediatric Dental Medicine at the Faculty of Dental Medicine, Medical University of Varna for prophylactic examination. Intraoral examination revealed the presence of an unilaterally unusually large tooth in the region of the upper left central primary incisor of the upper jaw. A status localis intraoralis showed the presence of a twin primary tooth 61. Second clinical case: A 3-year-old girl attends a clinic at the Department of Pediatric Dental Medicine for a prophylactic examination, with complaints from parents that she has a larger and different primary tooth in her lower jaw to the right. The intraoral examination revealed the presence of an unilaterally unusually large primary tooth in the area of the lower right lateral incisor and the canine region. On clinical examination, the site strongly indicates a primary lateral incisor and canine fusion 82 and 83. Dental anomalies are a health and psychological problem for dental patients and parents. Fusion of teeth or fusions most often results in a reduced number of teeth in the tooth row. The fusion of teeth in our case is one-sided and affects the primary dentition.

1. **D. M. Damyanova, S. G. Atanasova. Dental Caries Prevalence in 3-6 Years Old Children. Abstract in ORCA goes Digital in Sardiniameeting Srl – Cagliari, July 09 - 11, 2020, Car. Res; vol. 54 (Sp. Issue 4):29. ISSN: 0008-6568 (Print), e-ISSN: 1421-976X (Online)  
   DOI: 10.1159/issn.0008-6568. 2020, Nr. 69. (IF 2,326)**

The aim of this study was to investigate the prevalence of dental caries in 3-6 years old children. A retrospective analysis was performed, using medical cards of 300 children from 3 to 6-years-old. Children were divided into 4 groups depending on age of first visit: 3-year-olds (n=50), 4-year-olds (n=50), 5-year-olds (n=100), 6-year-olds (n=100). Registration of all dental caries lesions was performed in clinical conditions using the International Caries Detection and Assessment System (ICDAS) and DIAGNOdent Pen. In addition, the dmft/s index was calculated. The study was carried out in the period 2015-2017, with the permission of the University Scientific Research Committee. The results were obtained by processing the data with a STATISTICA Manual, Version 10.0, 2010. Parallel to the increase of age, the number of lesions increased and the average value of carious lesions into the total group of participants from 3 to 6 years old was 4.40 ± 0.21 (dmft) and 6.35 ± 0.65 (dmfs). Patients in group 1 had a dmft of 2.80 ± 0.25, in group 2 of 3.00 ± 0.21, in group 3 of 4.30 ± 0.29, and in group 4 children had the highest caries prevalence (5.10 ± 0.32). There was a significant difference in the intensity of caries for children with different number of primary teeth in their dentition. There is a strong proportional relationship between the number of carious primary teeth and surfaces.

1. **Dobrinka Mitkova Damyanova. The knowledge of dentists for the prevention of influence of the caries process. International Journal of Public Health Science (IJPHS). 2020; 9(3):176-183. p-ISSN: 2252-8806, e-ISSN: 2620-4126. DOI:**[**http://doi.org/10.11591/ijphs.v9i3.20478**](http://doi.org/10.11591/ijphs.v9i3.20478)

The line of knowledge runs from the general social, legal, financial and managerial framework. It is necessary to present the object of professional activity, the peculiarities of professional work and the methods for its optimization. Subjects of the survey are 100 dentists who perform treatment of deciduous teeth from the city of Varna, Bulgaria. The individual addressed anonymous survey was fulfilled during educational, clinical and organization meetings at the Faculty of Dental Medicine-Varna and on the territory of the city of Varna. The interviewed dentists encounter difficulties with the diagnosis of the initial dental caries in primary dentition. The dentists included in the survey rely mainly on their theoretical and practical experience and routine clinical methods for non-invasive treatment of the initial dental caries. Work experience and the specialty do not have a significant impact on the awareness of dentists about the new criteria related to the diagnosis and prevention of dental caries in the primary dentition. The age, work experience and specialty of dentists are factors for their awareness of the new approaches to treatment of children, as doctors up to 30 years of age, with a recognized specialty and work experience up to five years are more informed.

1. **Dobrinka Damyanova. DENTAL ANOMALIES: HYPOPLASIA AND TOOTH AGENESIS – A CASE REPORT. Int J Surg Med. 2020 Sept.; 6(6): 6-11, E-ISSN: 2367-699X | P-ISSN: 2367-7414. doi:** [**10.5455/ijsm**](http://dx.doi.org/10.5455/ijsm.heat-shock-protein-27-er-breast-cancer)

Background & Aims: A research shows that lower right second premolar was among the most frequently missing teeth (3.7%). Only (0.08%) of the research subjects had six or more missing tooth (Oligodontia). The purpose of this study is: Diagnosis of developmental defects of the dental hard tissues and their treatment. Case summary: In order to conduct the study, we received pre-declared informed consent from the parents of a patient who is 10 (ten) years old. The study was conducted in 2019-2020. Caries status was evaluated using both clinical and radiographic data and assessed as D1/D2 – enamel lesion and D3/D4 as dentin lesion. Dental status and treatment. We defined the diagnoses: Caries medioocclussalys d3b on tooth 65; Caries distoocclussalys d3b on tooth 64. Caries was treated by fillings of the cavities with a Dyract compomer. Deep non-mineralized fissure of tooth 36 with subsequent application of sealant. Orthopantomography also shows Hypodontia premolar dentis teeth (35, 44, 45); Hypodontia dentis (18, 28, 38, 48 D: Oligodontia). Diagnosis: 10-year-old boy with hypoplasia of the upper permanent incisors and Oligodontia. The patient was treated with non-invasive and invasive methods of treatment. The study was conducted at the University Medical and Dental Center, Varna, Bulgaria. Conclusions: 1. Developmental anomalies associated with tooth agenesis include delayed tooth formation, prolonged primary tooth exfoliation, retained primary teeth, interdental spacing. 2. Enamel hypoplasia increases the risk of developing dental caries. 3. Early diagnosis allows optimal patient management and treatment planning and can reduce complications from the planned treatment.

1. **Damyanova D. Questionnaire For the Patient's Health in the Dental Anamnesis. J of IMAB. 2021 Sep-Dec; 27(1): ISSN 1312-773X, DOI prefix: 10.5272/jimab.**

Purpose: The aim of the study is to test the knowledge of a selected group of parents of child patients regarding the diagnosis, the health status of the children and the choice of a medical institution in the Varna region. Material and methods: The respondents in this study were 40 (N = 40) child patients and their parents, selected at random. Respondents answered questions about knowledge concerning: general health, a change in general health, child's admission to hospital and whether it was ill during the last three years, whether the patient is being treated by a doctor for a general medical or systemic disease, pain that has occurred at the moment, and how parents choose a medical institution with modern dental services and others. For data analysis we applied a test and mathematical model of SPSS v. 20. Results: Nine children (22.50%) of the surveyed participants are currently complaining of pain caused by a dental problem. Parents report two children with past dental illnesses. The main source of information about the services offered by the University Medical and Dental Center in the city of Varna are relatives and acquaintances who have used the services of the center (40.00%), followed by the information published on the Internet (30.00%). Conclusions: The study improves the knowledge of parents, the choice of clinical and paraclinical methods in the anamnesis, diagnosis, methods and quality of treatment in childhood. The obtained results are also applied in the future planning of new clinical and treatment goals.

1. **Dobrinka Damyanova, V. Velikova. Risk factors associated with the development of dental caries in Bulgarian children. International Journal of Public Health Science (IJPHS). 2021; 10: p-ISSN: 2252-8806, e-ISSN: 2620-4126. DOI:**[**http://doi.org/10.11591/ijphs.v9i3.20478**](http://doi.org/10.11591/ijphs.v9i3.20478)

The purpose of this study is to examine the risk factors associated with the development of dental caries in children in Bulgaria. The research has been carried out at the Faculty of Dental Medicine, in the period 2015-2016, with the permission of the University Scientific Research Committee and informed consent signed by each parent. The object of observation were parents of children from Varna region in Bulgaria. The volume of observation encompasses 100 persons. Units of observation are patients aged 3 to 6 years with the need for prevention and treatment of dental caries of the primary dentition. The registration was done in a specially developed questionnaire, including 22 questions, each with the possibility of more than one answer. In processing the obtained data, Student's criterion was used to compare the mean values ​​of two independent samples. In a comparative analysis of the results, we found that 71.01% of children aged 3 to 6 years visit a dentist, and patients use fluoride only in the form of toothpaste containing fluoride. When studying the knowledge and behavior of parents in the direction of risk factors for the development of dental caries and oral prophylaxis, need for a new approach of pediatric dentists has been found, focused on programming preventive and non-invasive treatment of children according to their individual needs.

1. **6 pcs. scientific-educational films of SEM microscope** - samples of healthy primary teeth and samples of de- and re-mineralization processes visualized on primary teeth
2. **Participation with posters and reports in Bulgarian and foreign scientific forums (8 pcs.), arranged in chronological order**

1. Dobrinka M. Damyanova, Sirma Angelova, Teodora Targova-Dimitrova, Elena Dimova*.* ASSOCIATION BETWEEN OHI-S AND PBI-S AINAMO AND BAY IN CHILDHOOD. 28–th Annual Assembly of IMAB Varna, Bulgaria, 13-16 May 2018, PP № 5.

2. Teodora R. Targova-Dimitrova, Sirma T. Angelova, Stefan Vasilev Peev, Dobrinka Mitkova Damyanova. PREVENTION AND DIAGNOSIS OF DENTAL CARIES, PHOTOSENSITIVE PROPERTIES AND PROPERTIES OF THE LIGHT SOURCE AT THE BEST DOSE OF PDT: A REVIEW. 28-th Annual Assembly of IMAB Varna, Bulgaria, 13-16 May 2018, PP № 14.

3. Dobrinka Mitkova Damyanova, Sirma Angelova. Association of Oral Hygiene Status with Caries Incidence in Primary Teeth. 24thGlobal Dentists and Pediatric Dentistry Annual Meeting June 11-12, 2018 London, UK. Dentistry. 2018; 8:78, E-POST.

4. Sirma Todorova Angelova, Dobrinka Damyanova. Gingival Status in Children with the Diagnosis of Pyelonephritis. 24thGlobal Dentists and Pediatric Dentistry Annual Meeting June 11-12, 2018 London, UK. Dentistry. 2018; 8:80, E-POST.

5. Dobrinka Damyanova, Stefan Peev. Assessment of Distribution of Pulpitis in Primary Dentition. International Dental Journal (IDJ). The Authors **FDI World Dental Congress 2018 September 05-08 Buenos Aires, Argentina.** 2018; 68 (Suppl. 2):35**, E-POST P 054.**

6. Dobrinka Damyanova, Siyana Atanasova. Analysis of the Restored Teeth in Children from Varna, Bulgaria. Journal of Dental Research (JDR). 4th Meeting of the International Association for Dental Research. Asian Pacific Region 28-30 November 2019, Brisbane Convention & Exhibition Centre, Queensland, Australia. J Dent Res Vol # 98 (Spec. Iss Letter B). POST P ID 52 - PP.

7. Gergana Georgieva, M. Enchev, D. Damyanova. Risk Factors Influence – Oral Hygiene and Tooth Decay in Risk Assessmemt for Children From 3 To 18 Years. Scripta Scientifica Vox Studentium. Medical University of Varna: Abstract. 22-24 Nov. 2019; 3(suppl. 1):64, PP.

8. D. M. Damyanova, S. G. Atanasova. Dental Caries Prevalence in 3-6 Years Old Children. 67th ORCA Congress in Cagliari 6-11 July 2020, Cagliari Sardinia, Italia. Car. Res. May 2020; PP: 290. (IF 2,326)

9. Dobrinka Damyanova. HYPOPLASIA DUE TO VITAMIN D DEFICIENCY AND OLIGODONTIA – A CASE REPORT. 30-th Jubilee Annual Assembly of IMAB. 18 - 20 October 2020, Online sessions, Dental Medicine № 8.

2020, Varna