Prevention and Oral Hygiene

Randomized controlled clinical trial on ergonomic advantages in one step maintenance therapy

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Aim: The present study aims at evaluating the ergonomics of a one-step oral hygiene procedure in patients under hygienic maintenance, comparing two machineries that include the airpolishing unit and the ultrasonic one in the same body.
Materials and Methods: Sixty patients under periodontal maintenance, in a good systemic health condition and who have at least a residual pocket depth of ≥4 mm were selected for this study. The following categories of patients were excluded from this study: smokers, pregnants or nursing, patients with mental disorders, patients under anticoagulant therapy, patients under biphosphonates therapy, patients affected by immunological disorders, with severe diabetes and patients with fixed or mobile orthodontic appliances or prostheses. The patients were randomly divided in two groups using a randomization software: Group 1 and Group 2. The Group 1 has been treated with Mectron COMBI Touch ® (test) and the Group 2 has been treated with Mectron COMBI ® (control). Before the ultrasonic scaling and deplaquing were performed, a clinician collected the number of teeth, the number of sites ≥4mm, among which number of sites ≥ 6 mm, and Full Mouth Plaque Score (FMPS). No anesthetics were used during the oral hygiene procedures. The airpolishing procedures allowed to leave supragingival tartar exposed speeding its removal up during mechanical instrumentation. Plaque and stains have a different consistency from the tartar. This order of instrumentation facilitated calculus removal by making it more recognizable and homogeneous in consistency. A second operator, performed the treatment to both groups. The first operator clocked the time taken for deplaquing, the time taken for scaling and the total time taken for the full procedure. At the end of the treatment, patients were asked to assess the subjective appreciation of the treatment with Visual Analogue Scale (VAS) especially designed and immediately administered after the treatment. The scale consisted in a 10 cm line on which the patients had to indicate their degree of therapy approval from 0 to 10, where 0 represented the minimum and 10 the maximum. The same visual scale was shown to the operator who had to indicate his approval rating to the working sessions. A different operator performed the statistical analysis. T Student test was used to compare the results.
Results: The average time spent for airpolishing procedure was 1,3 (±0,3) minutes for Group 1 and 2,9 (±0,7) minutes for Group 2. This difference was statistically significant (p<0.005). The average time spent for ultrasonic procedure was 16 (±3) minutes for Group 1 and 17 (±2) for Group 2. This difference was not statistically significant. The average time spent for the total session was 17,3 for Group 1 and 19,9 for Group 2. This difference was statistically significant (p<0.005).
Conclusion: Ultrasonic instruments have been used as valuable adjuncts to conventional hand instruments for many years, proving to have a remarkable effectiveness. The technological advancement and clinical experience have allowed the evolution of machineries that have become ever more efficient and effective. In conclusion, this approach tends to be less time consuming and more ergonomic than a traditional

instrumentation method.

Oral hygiene motivation effectiveness on oral mucositis in pediatric patients with onco-hematological diseases

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Aim: Leukemia is the most common cancer in children and teens, accounting for almost 1 out of 3 cancers (30%). Most childhood leukemias diagnosed in children aged 0-14 years are acute lymphocytic leukemia (ALL). The oral cavity is the most common location for complications related to cancer treatments. One of the most frequent and debilitating complication of chemotherapy is Oral Mucositis (OM) mainly due to the dosage and the specific nature of chemo agents used. Despite the importance of prevention of OM, there is no universally accepted protocol to treat this problem so far. The aim of the study was to assess the effectiveness of adequate oral hygiene procedures on prevention and/or treatment of the oral complications due to chemotherapy and radiation in pediatric patients with onco-hematological diseases.
Methods: Between May and October 2016, 20 pediatric leukemia patients aged 3-20 years have been involved. All of them were hospitalised in the Pediatric Oncology Hematology Division of the University-Hospital in Padua and undergoing chemotherapy. This study comprised two assessment stages: baseline (T0) and 60 or 90 days-according to the patients' health conditions and their availability in the division- (T1). At baseline the hygienist examined the patients for the first time, collecting the data required for the medical record and focusing in particular on the Plaque Index (PI), the Oral Mucositis Grading (OM, according to the WHO Scale 1979) and the Oral Assessment Guide (OAG). At this point the parents were asked to fill in a survey and a brochure was given, specifically created for the patients involved in this study. Moreover together with their children, they were instructed and motivated to the exact oral hygiene procedures. At Time T1 the same indicators were registered at the same conditions.
Results: 17 patients were reassessed after 90 days and 3 patients after 60 days. With regard to the Plaque Index (PI), 12 patients out of 20 evidently improved, while in 7 cases this index remained stable. In relation to the Oral Mucositis Grading (OM) 16 patients maintained the same very low starting levels and 3 improved their oral health conditions thanks to a correct and constant oral hygiene. Lastly about the Oral Assessment Guide (OAG) a significant improvement were registered for 13 patients while for other 5 the initial conditions remained unchanged. It is important to point out that only a patient suffering from a metastatic liver cancer, registered a worsening of all the indexes due to the impossibility to apply any oral hygiene procedures.
Conclusion: Considering the effects of the possible oral complications on the patient's quality of life, their prevention is essential. According to the scientific literature the best practice is based on the oral hygiene protocol, including a correct training and motivation both of the patients and their families. This study confirmed that a combined effort of the dental hygienist with the oncologists is very important to alleviate the oral complications before, during, or after the therapy in children with onco-hematological diseases. An effective multidisciplinary team approach is fundamental to maximize the chances for a very successful treatment outcome.

Reassessment over distance of two domestic hygiene maintenance methods, in patients with overdentures on implants: a randomized clinical trial

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Aim: The main aim of this clinical study was to evaluate the methods to maintain optimal oral hygiene in patients rehabilitated with overdenture retained by four implants splinted by milled bar. This purpose has been pursued by a comparison of effectiveness of the most used methods this patient's category.
Materials and methods: The study sample included 18 subjects (9 women and 9 men) aged between 44 and 72 and with a mean age of 62 years. The treated patients had implant rehabilitation only in one arch, 11 subjects presented maxillary overdenture and 7 mandibular one. The first step was the registration of main parameters of oral health, including BOP, PI, PPD, and PI on prosthesis attachments in order to assess periodontal and prosthetics conditions. After this registration patients underwent an oral hygiene and were randomly divided in 2 groups, group A and group B. The subjects of the two groups received different instructions on oral hygiene and different products were given them. However in both groups intensive instruction and motivation in oral hygiene

were carried out. Group A was instructed to use super floss and an implant soft toothbrush on implant component; to brush the prosthesis the same toothbrush with polishing paste was used. Patients of group B used interdental brushes with plastic core and manual soft toothbrush on implants and the same toothbrush with degreasing soap on the prosthesis. Three weeks later patients were recalled and all parameters considered at baseline (BOP, PI, PPD, PI on prosthesis attachments) were re-recorded.

Results: After two sessions, data at baseline and new data collected were compared and subjected to statistical analysis. The primary outcome is the improvement of all parameters in both groups from T0 (baseline) to T1 (second visit). However this improvement appeared greater in group B than in group A. Statistical analysis confirmed the significantly better results exhibited by group B only for BOP and PI. The minimal improvement of PPD from T0 to T1 was not significant, probably due to the short time interval considered; about PI of prosthesis attachments no difference between the two group was found.

Conclusion: Results suggest that the instruments given to group B for implants care are apparently more efficient than those used by group A, and in particular the interdental brush resulted to be more efficient than the superfloss. However this conclusions must be analyzed considering the short period of time, low sample size and the dexterity of each individual subject.

Caries risk assessment models in children and adults: a systematic review

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Aim: This paper aims to provide a systematic review of the use od caries risk assessment (CRA) models in clinical studies, structured around the type of caries risk model, target population (children and adult), comparison amoung different caries risk models and diagnostic accuracy of each single model.

Methods: A search filter was developed and tested to identify reports where the CRA methods were evaluated. A systematic literature search for relevant papers was conducted via Pubmed, Scopus and Embase, using pre-determined inclusion criteria. The studies included in the present review are Clinical Trials, Cross-sectional, Cohort studies and other studies included from authors reporting caries risk assessment in patients of any age related to caries status recorded by DMFT/S or ICDAS indices. The study selection included reports published in perr reviews journals that used validated criteria to assess and prediction caries.

Results: Several caries risk methods were proposed and they might be summarized in two main categories: those using an algorithm with a software program and those using standardized questionnaires (self-submitted and/or by an interview). The search identified 1011 reports, and after title, abstract and text revision, 33 were selected, 17 on children, 13 on adult and 3 studies reported data on both. The majority of studies estimates the caries risk using different version of Cariogram model (32 studies). Twelve longitudinal studies were performed to evaluate the capability of caries risk assessment model to predict new caries lesion on children and four studies to predict caries on adult. The majority of the studies (31 on 33) reported a statistically significant association between the risk categories measured using the caries risk assessment model and the caries prevalence, experience, severity.

Conclusion: Caries risk models are suitable methods to identify subjects with a higher actual figure and to predict the development of new lesions in the future in children and adult. Algorithms-driven programmes, as Cariogram model, evidenced a high sensitivity and specificity and they have proven to be usefull supports to identify high caries risk patient, giving to the clinical the chance to plan correct preventive and/or therapeutic intervention.

Oral health in patients with Langerhans cell histiocytosis: a pilot study

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Aim: Langerhans cell histiocytosis (LCH) is a rare disease characterized by an abnormal proliferation of CD1a-positive histiocytes (Langerhans cells) and a massive aggregation of eosinophil leukocytes. Oral manifestations may be the first and sometimes the only clinical sign of LCH. The disease can occur in the mouth with single or multiple lesions of the alveolar or basal bone, ulcerative lesions of the oral soft tissues accompanied by enlarged lymph nodes and / or periodontal lesions, gingival inflammation,

bleeding, recessions, necrosis, toothache, hyper-mobility and / or premature loss of teeth. Oral and periodontal lesions are correlated to a significant decrease of the quality of life.

Methods: In this pilot study a sample of 25 patients (12-67 years old) with LCH have been examined with the primary objective of evaluating the dental hygiene, periodontal status and oral health-related quality of life. The secondary objective was to assess a clinical specific protocol of dental-periodontal prevention. The patients were stratified according to the presence or absence of oral involvement: respectively 32% and 68%.

Results: From the dedicated questionnaire, we found significant (p <0.05) the result that 12% of the sample has difficulty in speaking and pronouncing words and, of these patients, 100% have at least one location in the oral cavity. In addition, 24% of the sample test feel embarrassment and tension due to the appearance and health of teeth (83% with oral manifestations). 84% of the sample took medications (23.8% with oral manifestations). By the values of the Community Periodontal Index (CPI) among patients without location in the oral cavity, no one presents good dental-periodontal health: 5.9% showed bleeding, 64.7% calculus, 29.4% periodontal pockets > 3mm. Among patients with at least one location in the oral cavity, instead, 12.5% has good dental-periodontal conditions, 25% bleeding on probing, 25% calculus and 37.5% periodontal pockets > 3mm. The Silness-Löe Plaque Index (PLI), showed that 62.5% of the sample has a good plaque control, 25% adequate and 12.5% insufficient. The majority of patients (75%) with oral involvement presents tooth mobility (vs. 23.5% of those without oral localization) and all of them have gingival recession (vs. 47% of those without involvement of the oral cavity).

Conclusion: In patients with LCH the dental team plays an important role: sometimes oral lesions can be the only clinical sign of the disease, often resulting in periodontal involvement. Although bone and mucosa were classified as non-risk organs, their involvement can lead to a risk of disease progression. Furthermore, in the case of localization in the oral cavity, the lesions are associated with a variety of signs, symptoms and loss of function, which can significantly reduce the quality of life. In our opinion, this pilot study has to be deepened and extended, taking into account the poor oral hygiene conditions showed in the sample, to increase the awareness of preventive and educational measures for monitoring oral hygiene and oral diseases of these patients.

Evaluation of sports performance for athletes

treated for gingivitis and periodontitis

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Aim: The aim of this study was to evaluate sports performance of 44 athletes before and after being treated for gingivitis or periodontitis. Supplementary intake effects on the hard tissues of the tooth were evaluated in the second phase of the research.

Methods: we selected 44 athletes aged 20-67 who practice cycling as a hobby, 11 of whom suffered from chronic periodontitis. These athletes were subjected to a visit and periodontal screening. After assessing the condition of their oral cavity they were submitted to the Conconi test to evaluate sports performance. The test was set to measure heart rate and power in watts at different speeds. The initial speed was 25 km/h and the increase was 2 km/h every minute. The athletes that suffered from periodontitis were subjected to blood tests to detect: Procalcitonin, PCR and VES. Subsequently they were subjected to therapy and to custom TBM protocol. After 30 days the values were measured again. In a second phase the scores of the BEWE index were calculated and correlated with the intake of supplements before, during and after exercise.

Result: at baseline the average test value was: 56% plaque, 44% bleeding, 10,5 probing>4mm in patients with periodontitis; 29% plaque, 16% bleeding, 0,06 probing>4mm in patients without periodontitis; test Conconi heart rate showed a progression from 112,75 at 25km/h to 175,33 at 51km/h in patients with periodontitis and a progression from 104,40 at 25km/h to 190 at 55km/h in patients without periodontitis; 459,43 watt was reached in patients with periodontitis and 434,05 watt was reached in patients without periodontitis. After therapy the average test value was: 19% plaque, 12% bleeding, 3,50 probing>4mm in patients with periodontitis; 15% plaque, 7% bleeding, 0,03 probing>4mm in patients without periodontitis; test Conconi heart rate showed a progression from 107,83 at 25km/h to 180 at 55km/h in patients with periodontitis and a progression from 104,03 at 25km/h to 189 at 55km/h in patients without periodontitis; 516,35 watt was reached in patients with periodontitis and 434,82 watt was reached in patients without periodontitis. The average of PCR,VES and Pro Calcitonin before therapy was respectively 53,71 mg/l; 54,80mm/h; 1,03ng/mm; and after therapy was 10,61mg/l; 17,91mm/h; 0,18ng/mm.

Discussion: We proved that periodontal disease is a disease with systemic implications. In this study

the PCR, VES and Procalcitonin values increased significantly in patients with periodontitis (p<0,05). In addition to the blood chemistry we proved that even sports performance is related to periodontal health conditions. Subjects with chronic periodontitis improved significantly in sports performance (p<0,05) while subjects with gingivitis did not have significant changes because they did not have a systemic infection in place (p>0,05). In the second phase of the study we found a significant positive correlation between the BEWE index and supplement intake (p<0,05), due to the acidic pH of the majority of supplements currently on the market.

Conclusion: This study proved that periodontal disease causes deterioration of sports performance. Further studies are needed to explore the topic and to strengthen this thesis. This study revealed that it would be useful to include periodontal screening amongst the examinations prescribed by sports team in order to optimize the performance of their athletes. Taking supplements is a common practice and sometimes essential for athletes, it is therefore useful to teach the subject to correct habits to minimize the erosive damage of supplements.

New scenarios for oral health: probiotics

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Aim: This study aims at verifying the effectiveness in improving oral conditions in patients wearing prosthodontics of a probiotic dietary supplement (Lactoflorene Plus) consisting of Lactobacillus Acidophilus LA-5®, Bifidobacterium BB12®, Bifidobacterium Infantis M-63, Bacillus Coagulans BC513, Zinc and B-group Vitamins.

Materials and Methods. 48 patients (aged between 55 and 70) with fixed prosthesis on natural teeth or implants were recruited according the following criteria: Plaque Index (PI score >1), diagnosis of gingivitis (GI score >1), tongue-coat presence. Patients meeting the following criteria were excluded: systemic diseases, oral antiseptics in the previous month, antibiotics and/or prebiotics in the previous 30 days. Primary and secondary outcomes were evaluated at baseline and after 30 days. Plaque Index (PI) and Gingival Index (GI) were collected to all patients. Tongue-coat presence/absence were evaluated and Halitosis test (Sniff Test) was performed. Home maintenance protocol was given according to the Tailored Brushing Method (TBM) recommendig a medium bristles compact size toothbrush (Gum Technique Pro Compact Medium) and an interproximal brush made out of rubber (Gum Soft Pick Advance). Professional oral hygiene was performed. Glycine powder was used for airpolishing on prosthesis and bicarbonate powder for airpolishing on natural teeth (Mectron Combi touch). Supragingival ultrasonic scaling was performed using a universal tip (Mectron S1). The 48 patients were casually divided into two groups, the Test group and the Control one. Test group was asked to take a probiotic supplement (Lactoflorene Plus), once a day, 30 days long. Control group did not receive any adjunctive therapy. After 30 days clinical indexes were collected again, tongue coat was evaluated and Sniff test was performed. A different operator collected the results and carried out a statistical analysis using T Student test.

Results: Data which came to the light after the study show how values of indices (PI and GI), of tongue-coat, and Sniff Test result decreased, compared with the control group. The differences were statistically significative (p <0.05).

Conclusions: The study showed us that an alternative bacterial therapy can significantly help for plaque control and gingival inflammation. The probiotic used was composed of live and active bacteria, which can be neither pathogenic, nor toxic, and of fermentation enzymes, since they can produce lactic acid, and are useful to rebalance bacterial flora. We can assert that traditional gingivitis treatment along with a treatment with a probiotic dietary supplement (Lactoflorene orally disintegrating powder) can lead to better results. Oral health in patients wearing prosthesis could be improved by using an alternative therapy with probiotics.

Oral health sentinel-based surveillance: a pilot study

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Aim: Aim of the study is to assess the development of a structured sentinel system for oral health data collection at national level. Furthermore, this pilot study aims to investigate the prevalence data on dentinal sensitivity pain collected through a nationwide network of epidemiological sentinels (dental hygienists).

Materials and Methods: Each sentinel was given a

specific number of examinees and periodicity of data collection All the epidemiological sentinels were professional Dental Hygienist, affiliated to a national scientific association of dental hygienists (SISIO). To gain a proper sample consistency and territorial distribution, a stratified sampling method, based on the subject's sex, geographic location, education and employment, was used to obtain a representative sample of the Italian adult population aged 18-35 in good conditions health and able to comply with all study procedures and restrictions. The calibration of the examiners was organized at the Department of Dental and Maxillofacial Sciences, Policlinic Umberto I, Rome by two high-level epidemiologists, for 2 days, based on the examination and re-examination of 15 subjects. Intra- and inter-examiner reliability was assessed according to WHO recommendations. Intra and inter-examiner agreement expressed as Kappa values was 0.82 and 0.75 respectively. Each participant completed a self-administered questionnaire based on those used in previous studies that identify risk factors for dentine hypersensitivity. All eligible teeth, except second and third molars, were evaluated for the presence or absence of DH.

Results: Overall, 116 adults were recruited from 19 Regions, 42,24% male and 57,76% female, with a mean age of 26. DH result was consistent with literature data, being 45%. All sentinel completed the standard forms and assured a good compliance. The overall good customer satisfaction assures adhesion of the sentinels to the procedure, and the regular data collection.

Conclusion: The pilot study proved the effectiveness of a structured nationwide network of epidemiological sentinels (dental hygienists) for oral health data collection at national level. This methodology can be an essential starting point for periodic comparative studies that can lead to national and not only inter-regional level. The use of new technologies for the recording of readings is another strong point of the project. The proposed system is based on recommendations and methodologies for collecting data for which there is an agreement on the validity and significance, and for which the majority of the EU countries has already available data.

Dental screening in school age children: oral health and eating habits

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Aim: The aim of this study was to analyze the data collected among children of Primary school (3rd class, SSM Postel School, Gaeta, Italy) aabout oral health and eating habits.

Materials and Methods: The observational study was carried out on a sample of 73 children (34 males and 39 females); they were organized some training sessions about oral health to the children's teachers and suring the screening day, prior parental consent, children were subjected to a dental visit. The following data were measured: DMFT, degree of oral hygiene (espressed with the following score: 1 insufficient;2 scarce;3. Good; 4 excellent), kind of malocclusion, frequency of brushing and frequency of dental controls. The children were helped to fill in a questionnaire aiming to identify the amount of sugar intake during the day and especially at snack time. Data analysis was performed by recording the frequency distribution and the Anova analysis was used for the correlation of variables.

Results: 80% of the sample despite subjected to a previous dental visit had inadequate oral hygiene conditions, with an average of 1.4 decayed teeth per child; more than 80% of the sample took daily sweet foods and sugary drinks.

Conclusions: adhering to the proframs of Oral Health Prevention, School can help child to acquire correct behavioral habits in order to improve oral health and an adequate home care level, through a theoretical and practical customized training. Then School can convey messages alerting parents in favor of healthy food and lifestyles adequate to the development and maintenance of the oral health of the child.

The smile: a constant feature of figurative art through the centuries

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Aim: Assessment of pictorial perception of the smile in different historical periods

Materials and Methods: Over 100 works of art by Italian and foreign painters depicting characters who smile in portraits, self-portraits, sculptures, and figurative representations have been selected. The paintings were chosen following an iconographic and chronological order over a period of time ranging from the fifteenth to the twentieth century. The works depict different types of smile, which have been compared with each other and evaluated by consulting art history, general psychology, physiology, and psychology of the smile texts. Review of literature: a selection of texts has set the background for the historical and cultural

understanding of the paintings; biographies of the authors provided information on the cultural environment in which artists were formed, and in which they lived and worked.

Results: Over the centuries, the smile was widely represented, both in painting and in sculpture. From the archaic greek period to the present day many artists have dealt with the issue of facial expression. The comparison between the paintings and the selected texts showed a strong link between the iconography of the characters and their contemporary thought. The high number of works depicting a smile testifies to the great expressive value that men have attributed to it. Careful observation of facial representation in art helps to understand the perception that in different periods of history the artist -and therefore the man- had of himself. In the age of the Renaissance the main sources of inspiration for the artists were the classics, in literature and poetry. Aim of the art the representation of beauty described by poets and philosophers, so the poses and expressions were characterized by a measured composure. In the sixteenth century, the portraits became more spontaneous, the artists tried to represent the emotions so that the portrait could reveal the character's inner life. Lips therefore gradually opened up to uncover the teeth with all their irregularities and imperfections. In the following centuries spontaneity and expressiveness fully entered the works of art. There are many paintings of the seventeenth century that portray people in in the most natural poses and attitudes. Baroque artists actually distance themselves from the canons of classicism and the smile becomes very often a mean to bringing irrationality and insanity on the canvas. In the eighteenth century, the age of reason, the aristocrats were portrayed in elegant clothes and attitudes to assert their social and intellectual superiority, along a route that will encompass the entire nineteenth century. From the twentieth century onwards some artists were so fascinated by the theories of Sigmund Freud that they showed in the self-portraits, through uninhibited smiles, their whole inner life and soul.

Conclusions: Figurative art offers a viable and effective documentation on smile and life styles over the different periods of history. Research on the pictorial perception of smile in different historical periods highlighted the smile's significant social impact and showed that the patient cannot be considered equal in the course of time, but must becontextualized in the age in which he lives taking into account the psycho-social and cultural variables of the environment in which he operates.

Experimental analysis of three different

toothbrushes for interproximal space cleaning: *in vitro* and clinical evaluation

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Aim: the objective of this in vitro study is to evaluate the effectiveness of the removal of interdental plaque with three different toothbrushes: a manual one, one with oscillating-rotating movements and a sonic one.

Methods: 6 extracted human teeth were fixed in a plaster socket and matched to pairs simulating interdental spaces of three different sizes: a small one of 2.71 mm in length by 2.55 mm in height, an average one of 3.69 mm in length by 3.24 mm in height, and a great one of 4.26 mm in length by 4.07 mm in height. The approximal surfaces were covered by a layer of a commercial blue indicator, frequently used in dental laboratory (Blue Marker, YETI Dentalprodukte GmbH), to simulate the interdental plaque and by a film of artificial saliva (sodium phosphate dehydrate 1,07 g/L; calcium chloride dehydrate 0,22 g/L; sodium bicarbonate 1,68 g/L; purified water 99,703 g/L) to simulate the typical oral cavity environment. Subsequently, the interproximal surfaces were exposed to different toothbrushes handled by a group of dentists and dental hygienists and another one composed by peolple not in the industry: the standard mode of sonic toothbrush "Philips Sonicare Flexcare Platinum HX9142/04", the daily cleaning mode of oscillating-rotating "Oral-B Triumph 5000 D 34.575.5X" and the traditional Bass mode performed with manual toothbrush "Acquafresh Dynamic Flex" were so applied. The mentioned toothbrushes were used with the following timings: 20 seconds for each interproximal space, 10 seconds for the vestibular side and 10 seconds for the lingual surface. Before and after standardized cleaning of the proximal surfaces, the pre- and postbrushing situations were registered with a digital camera (Nikon D 5000 single-lens: AF-S NIKKOR 18-105 mm 1:3-5.6 G ED). The obtained pictures of all the 180 tests carried out were cropped with a sofware (Glimp 2.0) to isolate them from the background and to convert them to black and white thanks to another software (ImageJ 1:49). This last was applied in order to calculate the percentage of black (still stained with dye) and the one of white (cleaned by the brushing).

Results: according to Wilcoxon's test, no significant difference was observed between the surfaces cleaned by the group of non-experts and those of the expert group (P-value=0.11). ANOVA and Bonferroni's test denote statistically significant differences among the three groups of toothbrushes

(P-value=0.01). As can be seen from the cleansed surface values, the manual toothbrush yields the worst results. It cleans on average only 26.03% (min 13.07%; max 41.07%), the Oral–B toothbrush the 47.20% (min 15.01%; max 71.87%) and the sonic one 70.9% (min 52.30%; max 81.94%).

Conclusions: the result achieved by "Sonicare Flexcare Platinum" is almost triple compared to the manual toothbrush and almost double compared to "Oral-B Triumph 5000". It was found that this is due to the hydrodinamic forces produced by sonic toothbrushes.

Bidirectional association between periodontitis and metabolic diseases

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Aim: Oral cavity that harbors diverse bacterial populations could also act as a site of origin for spread of pathogenic microorganisms to different body sites. A number of recent publications have advocated that patients with periodontal diseases are more susceptible to metabolic endotoxemia, inflammation, obesity, type 2 diabetes, and other related systemic complications. They concluded then that periodontal diseases could be a potential contributing risk factor for a wide array of clinically important systemic diseases. The prevalence of periodontal infections and systemic diseases has significantly increased in the past few decades. In spite of this, the fundamental biological mechanisms of connection between these ailments are still not fully explicated. Consequently, the mechanisms by which this bidirectional damage occurs are being explored with a concentric vision to develop strategies that could prevent or control the complications of these ailments. The aim of this review is to investigate the relationship between periodontitis and metabolic diseases.

Materials and Methods: The PubMed database was consulted in October 2016 and January 2017 using the following keywords: "diabetes" AND "periodontitis", "periodontitis" AND "obesity", "peiodontitis" AND "metabolic syndrome", "peiodontitis" AND "neuropeptide Y", "periodontitis" AND "hyperlipidemia". The search was performed by two researchers and limited to studies involving human subjects. English language restriction was applied. Three researchers examined the articles obtained.

Results: 1856 articles were found for "diabetes and periodontitis", 371 for "periodontitis and obesity" and 126 for "periodontitis and metabolic syndrome", 5 for "peiodontitis and neuropeptide Y", 100 for "periodontitis and hyperlipidemia". Literature reviews were excluded. After reading the title and the abstract of each article we selected 151 articles for full text examinations.

Conclusions: Although the recent evidences have supported the role of periodontal infection and consequent inflammation in diseases such as obesity, hyperlipidemia and type 2 diabetes, the precise etiological role of periodontal infections still needs to be completely deciphered . Yet, the available literature is sufficient to establish that the periodontal diseases may be a significant risk factor for various systemic disorders. Hence, future studies are anticipated to elucidate the mechanisms through which the periodontal diseases and systemic diseases affect each other. Nevertheless, only after understanding precisely these diseases the attention could be shifted from the treatment of these ailments to their prevention for a healthier socioclinical scenario.

Tooth hypersensivity managment in young adults suffering from dental erosion

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Aim: Dental Erosion (DE) is a non-carious lesion consisting of progressive and irreversible loss of dental hard tissue due to the chemical process of acid dissolution that does not involve bacterial plaque acid. Its overall clinical appearance may also involve a frictional component, such as abrasion or attrition, particularly in older age groups. Since the 2000s, different epidemiological studies focusing on the prevalence or the aetiology of DE in adolescents recognised them as an at-risk population due to their eating behaviours. Tooth hypersensitivity is a short painful response to an external stimulus and it is often associated to dental erosion, because of the progressive tooth wear due to chemical erosion. The study was conducted to evaluate the effectiveness of a desensitizing varnish compared to a placebo in reducing tooth hypersensitivity caused by erosive lesions in young adults.

Methods: Sixty healthy young adults (age 18- 36 yy) suffering from DE and tooth sensitivity on at least two teeth were divided into two groups, the test

group and the control one. Cervitec F varnish (Ivoclar Vivadent Schaan, Liechtenstein), containing 1400 ppm fluoride and chlorhexidine was used for the test group. A placebo containing water and ethanol was applied for the control group. Tooth sensitivity was collected according the Schiff' scale. Professional oral hygiene was performed. Varnish or placebo was applied to the DE surface of each selected tooth by a blinded operator at baseline and after each control session. After thirty (T1) and ninety days (T2) tooth sensitivity was collected again. A different operator evaluated the results and carried out statistical analysis using T- test for paired data (p<0.05). Home maintenance protocol was given to each patient according the Tailored Brushing Method (TBM). Patients were recommended to brush twice per day with a medium bristles toothbrush (Gum Technique Pro Compact Medium) without any toothpaste and any mouthwash to avoid biases due to more than one source of fluoride.

Results: All the subjects completed the study. Test group improved with statistically significative results (p value <0.0005). Control group did not show any improvements and any statistically significant reductions were found. No side or adverse effects were found.

Conclusions: DE for many years has been a pathology of secondary interest to dental public health authorities, but this point of view is changing. In recent years the occurrence and severity of erosive tooth wear seems to have increased. Various studies have shown that the prevalence of erosive tooth wear has particularly increased among younger population. Our results confirm that desensitizing varnishes are a valid treatment for tooth hypersensitivity. The addition of chlorhexidine to fluoride to reduce tooth hypersensitivity seems to be effective in improving symptoms, playing an anti plaque and an anti bacterial role.

Pregnancy and oral health: preliminary investigation on medium degree of knowledge in pregnant and puerpere patients

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Aim: Many pathological processes can be developed during pregnancy: gingivitis, periodontitis, tooth decay, epulis etc. To prevent the onset and progression of these situations, it's essential a primary prevention toward oral health. Often pregnant women are not correctly informed or motivated for what concern the prevention of oral pathologies and they do not receive the correct information about the newborn (for example the right time for the first dental visit, the pathologies which can affect deciduous teeth and the right fluoride administration). Therefore the aim of this study was to evaluate which is the knowledge and what are the information that pregnant women and puerperal acquire about the relation between pregnancy and oral health and about the importance of oral prevention during this period. It's very important to know the possible relation between pregnancy and oral health in order to maintain a complete wellbeing.

Methods: 100 women (pregnant or puerperal) have received an anonymous questionary with 24 questions. The questionary included multiple-choice questions about oral pathologies, timing of dental checks, problems which can be manifested during pregnancy, oral care of the baby and fluoride administration especially during the first period of baby's life. In order to evaluate any differences in the sample, the testers have been split into 2 groups subdivided by age, and into groups subdivided by number of pregnancies.

Results: The degree of knowledge of the sample was medium – low. Considering the information and knowledge skills, there were no significant differences between the two groups. It seems that younger women acquired more information than older ones but only concerning the theoretical point of view. Women who were at second pregnancy (or more) had more information about fluoride administration, about baby's oral hygiene and the right time for the first visit; generally there were no significant statistical differences between the groups. On our territory there are no preventing programs addressed to this category of women, and there is no collaboration among medical figures like Dental Hygienists, Dentists, Gynecologists and Obstetricians.

Conclusions: At the moment, primary prevention toward oral health in pregnant women remains at the discretion of the individual operator, and there are no public programs of oral prevention. This study demonstrates the necessity to increase the diffusion of correct information. Through the establishment of educational and oral prevention programs toward these women and improving the collaboration among medical figures, it is possible to spread the concept of primary prevention.

Oral and systemic inflammation in normal weight vs. Obese pregnant women

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Aim: Hormonal, metabolic and immunological modifications in pregnancy cause many systemic and physiological changes in women and their oral health is affected as well. Oxidative stress is higher in obese patients due to the correlation of obesity with a low-grade systemic inflammation and the risk of having a more severe inflammatory status is enhanced. The aim of this study was to evaluate the impact of pregnancy on oral tissues and their inflammatory status in two cohorts of women - obese and normal weight - during their third trimester of gestation. Moreover, we assessed if saliva might be used as a non- invasive biomarker to detect local and systemic inflammation.

Methods: The ethical committee approved the study design and methods. After obtaining the informed consent, 62 women with singleton pregnancies were enrolled. Demography, medical history and oral hygiene habits were assessed with a questionnaire. All patients received a comprehensive oral evaluation, with the assessment of the number of teeth, BOP, PPD, OHI (debris and calculus) and DMFT. Salivary samples were collected by passive drooling technique for 3 minutes to assess s-TAC (Antioxidant Assay Kit) and s-CRP (C-reactive protein). Blood samples were collected with venipuncture in order to compare p-CRP with s-CRP levels. Every patient received detailed oral hygiene instructions.

Results: The sample included 27 normal-weight patients with a BMI≥18<25 kg/mq (NW; 43.5%) and 35 obese patients with a BMI≥30 kg/mq (OB; 56.5%). Seventeen women in the OB group were also diagnosed with gestational diabetes mellitus (OB-GDM; 27.5%). None of the patients received an oral prophylaxis in the 6 months before or during their gestation. The BOP, debris and calculus and DMFT indexes were higher in the OB and OB-GDM groups compared to the NW group. In the OB-GDM group the oral pathological values were almost two times doubled compared to the NW. The patients were further divided according to their periodontal health status, using the classification adopted by the American Academy of Periodontology (AAP). The results were: 20 healthy patients (H = 32.3%), 25 with gingivitis (G = 40.3%) and 17 with periodontitis (P = 27.4%). The parameters of BOP, plaque and calculus were almost 5 times higher in the periodontitis group compared to the healthy group. Regarding the inflammatory markers: s-TAC, s-CRP and p-CRP were significantly higher in OB patients compared to NW (p<0.001) and correlated with each other (p<0.001; R>0.59).

s-TAC was related to BMI (p=0.000; R=0.54); s-CRP and p-CRP had a significant relation with BMI (p=0.000; R>0.52) as well. Periodontitis was significantly higher in OB (80%) versus NW (52%) [χ2= 4.31, φ= 0.30, p= 0.04]. Periodontitis in NW did not enhance the inflammation and oxidative stress parameters, while their levels were higher in OB with periodontitis (s-TAC and p-CRP: p= 0.001). In addition, none of the patients showed the presence of gingival epulides.

Conclusions: the data collected suggest that a pregnant woman affected by obesity and GDM has a higher chance to have or worsen her periodontal pathology enhancing the local and systemic inflammatory status. Gingival inflammation and BOP affected more than 60% of the studied patients. The relation observed between salivary and systemic CRP supports the use of saliva as a non-invasive diagnostic biomarker. Thus, it is essential to promote an educational campaign among ob/gyno health care providers to promote oral health and prevent any oral infection that may adversely affect the mother and the fetus.

The effect of tailored oral hygiene instructions in patients with gingival manifestations of oral lichen planus: preliminary results of a randomized controlled study

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Aim: Oral lichen planus (OLP) is a chronic, inflammatory, immune-mediated disorder whose aetiology is still unknown. OLP affects middle-aged adults with a higher prevalence in women. Oral lesions are usually multiple and almost always have a bilateral, symmetrical distribution; they commonly take the form of minute white papules that gradually enlarge and coalesce to form either a reticular, annular, or plaque-like pattern. In some patients the lesions are erythematous or frankly ulcerated. Symptoms could range from no or mild discomfort to severe pain with difficulties in eating and speaking. Gingival lesions are present in 48% of cases, and in up to 10% of patients OLP is confined to the gingiva. The aim of this randomized,

controlled, parallel-arm clinical trial was to evaluate the impact of tailored oral hygiene instructions on clinical and patient-centred outcomes in patients with gingival manifestations of OLP.

Methods: Patients with a biopsy proven diagnosis of OLP and symptomatic gingival lesions were randomly divided in 2 groups: treatment group (T) and control group (C). All the patients underwent supragingival debridement at the time of enrolment. Group C patients received tailored oral hygiene instructions, while group T patients were asked to continue with their normal plaque control regimen and did not receive any specific advice. The oral health impact profile (OHIP-14), pain (VAS), plaque index (modified Quigley & Hein Plaque index) and mucosal disease score (modified Escudier index) were recorded in the 2 groups at the time of enrolment and after 4 and 20 weeks and compared using a mixed-model regression analysis.

Results: The a priori estimate sample size was of 100 patients. At the moment we collected data from 43 patients (group T: n = 22, 91% of female sex, mean age = 58.2±18.4 years; group C: n=21, 81% of female sex, mean age = 65.3±12.2 years). OHIP-14, plaque index and mucosal disease score showed a significant better trend in group T compared to group C (P = 0.011; <0.001 and 0.002, respectively). Differences were more evident in the 0-4 weeks interval, with a similar trend in the 2 groups in the 4-20 weeks interval. VAS score did not showed significant differences (P=0.082).

Conclusions: Our preliminary results showed that tailored oral hygiene instructions were effective in improving the oral health-related quality of life and clinically observed gingival lesions, in particular in the first 4 weeks. More reliable conclusions will be obtained at the conclusion of the trial.

Oral manifestations of subjects following vegan diet, an observational study

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Aim: The purpose of this study was to compare the oral health of subjects that had been following a vegan diet to omnivorous.

Methods: a group of 17 subjects following a vegan diet (VD) for a minimum of 1 year and 6 months was compared with a control group of 18 individuals following an omnivorous Mediterranean diet (MD). All participants were healthy, no smokers, living in the Marche region and aged between 20 and 50 years. The oral health evaluation was assessed considering the following clinical parameters: Silness-Löe Plaque Index (PlI), Full Mouth Plaque Score (FMPS), Silness-Löe gingival index (GI), Full Mouth Bleeding Score (FMBS), Basic Erosive Wear Examination Index (BEWE), Decayed, Missing, Filled Teeth Index (DMFT), probing deep (PD) and clinical attachment level (CAL). In addition, salivary pH values were recorded. All participants were asked to compile a written questionnaire to assess food and oral hygiene habits, weight and height.

Statistical analysis was performed with 2 and Wilcoxon- Mann-Whitney tests.

Results: no difference between the two groups regarding age was recorded (p<0.005); mean age was of 34.59 ±11.21 VD group, 34.33 ±12.69 MD group. 74.28% of observed subjects were normal weight (Body Mass Index (BMI) ≥18, ≤ 25) but 71% of overweight subjects belonged to the MD group. There were no significant differences between the two groups regarding PlI, FMPS, GI and FMBS indexes. VD group presented salivary pH values less than 7 (< 7) compared with the MG group that showed a physiological pH (≥7). In the vegan group, DMFT and BEWE indexes were significantly higher than the ones recorded in the control group. Concerning the eating habits, 35% of vegans used to take supplements compared with the 5% of omnivorous. The most widely used supplements were multivitamins and those with B12 vitamin. Furthermore, vegans were the largest consumers of hot and spicy foods. On the other hand, there were no significant differences in oral hygiene habits, being PD and CAL very similar between two groups.

Conclusion: The data of this study confirm those found in the recent scientific literature, thus demonstrating that the nutrition can affect the oral health. Numerous authors claim that a vegan/vegetarian diet may prevent overweight, even if this kind of diet reduces salivary pH values and improves the risk of tooth decay and erosion, thus leading to an increased risk factor of dental diseases. Although the present study had a limited sample size and, it does reveal significant differences in DMFT and BEWE indices between the two groups, and no other alterations in the oral health status were evident. Care supply presupposes a focus on overall health and further studies are needed to better understand the potential effects of different kind of nutritional habits.

Tailored Made approach for the distal surface of mucous partially included wisdom teeth

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Aim: This study aims at establishing if a new interdental brush, made out of soft rubber and having ergonomic grip, improves cleaning and tissues health conditions in the distal surface of mucous partially included wisdom teeth.

Methods: Thirty-two mucous partially included wisdom teeth were selected for this study and divided in two groups, the test group made of 15 teeth, and the control one made of 17 teeth. Full Mouth Plaque Score (FMPS), Full Mouth Bleeding Score (FMBS), Plaque and oedema presence or absence on the distal surface of the wisdom teeth were assessed before that professional oral hygiene was performed. A periodontal probe was positioned on the distal surface of the examined tooth, and moved from the buccal side to the lingual one. The presence/absence of biofilm accumulation and the presence/absence of oedema of the retromolar mucosa was registered on the clinical form. Professional oral hygiene was performed, using airpolishing with glycine powder and ultrasonic supragingival scaling (Mectron Combi Touch). A thiner ultrasonic tip (Mectron S2) and a 120° angled cleaning tip for airpolishing were used on the distal surface of the wisdom teeth. Oral hygiene instructions were given according to the Tailored Brushing Method. All patients were asked to brush twice per day for two minutes at least with a medium multi angled bristles toothbrush (Gum Technique pro compact medium). The toothbrush was choosen for the multi angled bristles, to be more effective also in the hard to reach areas such as the distal surface of the wisdom teeth. An operator supervised each patient while brushing alone to be sure of their manual skills. Patients of the test group were also asked to learn how to use a new interdental brush made out of rubber (Gum Soft Picks Advance) and were supervised by the operator while using it. The soft picks advance was choosen for its ergonomic curved grip that allows to reach better posterior teeth. Patients of test group were asked to complete the oral hygiene procedures cleaning the distal surface of the wisdom teeth with the Soft picks advance.

After 30 days all patients were evaluated and clinical indexes were collected again. T student test was used to compare initial and final values.

Results: FMPS and FMBS statistically improved in both groups (p< 0,05). This can be related to the short follow up period, to the professional oral hygiene performed and to the right choice of toothbrush. Plaque on the distal surface was detected only on two teeth of test group (13,3%), and the result was statistically significant compared to the initial values e compared to the final values

of the control group. Oedema was absent in the 100% of test group examined sites. Control group had oedema on 5 of the distal surfaces examined.

Conclusions: A customized oral hygiene maintenance program is essential to keep values of clinical indexes low. Choosing the right instruments for each patient is crucial in managing oral health maintenance, also in the hard to reach areas such as wisdom teeth.

Salivary ph in patients with juvenile idiopathic arthritis under drug treatment with methotrexate and etanercept: single or combined administration

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Aim: The aim of the study was to compare the influence of the therapy with Methotrexate and Etanercept, single or combined administration, on salivary pH in patients with Juvenile Idiopathic Arthritis (JIA).

Methods: 73 patients, 57 females and 16 males aged between 7 and 25 years, were included in the study. 22 of them were treated with Methotrexate (A) and 9 with Etanercept (B), while 8 used a combined administration (C) and 34 were untreated (D).

The salivary fluid of each patient was collected for 5 min and its H+ concentration was immediately tested with the use of a litmus paper.

No foods or drinks were taken by the patients for at least 2 hours before the test.

Results: All the groups showed a mean salivary pH of 6,9 , with the only exception of group B (patients treated with Etanercept) which demonstrated a slight mean decrease to pH 6,5.

Conclusions: In this study the drug therapy administered to JIA patients, compared with untreated patients, does not appear to adversely affect the salivary pH. However, a slight decrease of pH from 6,9 to 6,5 , was registered in subjects treated with Etanercept.

This result suggests to do more researches in order to understand if the pH decrease may be related to the drugs or caused by oral inflammatory conditions (gum, periodontal, oropharyngeal or gastro-intestinal inflammation)

Indeed, the concentration of nitric oxide, caused

by oxidative stress, can be researched in order to approximatively quantify the rate of inflammation through the Griess reagent.

$$4NO + O_2 + 2H_2O \rightarrow 4NO_2^- + 4H^+$$
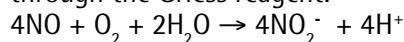
The upper shown red-ox reaction suggests to consider the presence of H+ in salivary fluids as a possible cause of pH decrease. At a later time, testing the salivary buffer capacity may be advisable, in order to better understand the problem, propose useful suggestions for the patients' daily life and prevent of oral and dental diseases. At last, more attention should be payed to nutrition and home oral hygiene (HOH) of these patients for the prevention of oral and dental diseases.

Protective effects of a zinc-hydroxyapatite toothpaste on enamel erosion: microhardness and SEM study

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Aim: The aim of the present in vitro study was to evaluate the protective effects of a zinc-hydroxyapatite toothpaste compared with fluoride and no fluoride toothpaste against an erosive challenge produced by a soft drink (Coca-Cola) using Scanning Electron Microscopy (SEM) to evaluate morphological changes of enamel and a Durometer by which enamel hardness was monitored using surface micro-hardness measurements to investigate the Vickers microhardness (VK).

Methods: The following four toothpastes were tested: two toothpastes with Zn-HAP, one toothpaste with fluoride and one toothpaste without fluoride. An additional control group was used in which enamel specimens were not treated with toothpaste. Repeated erosive challenges were provided by immersing bovine enamel specimens (10 per group) in a soft drink for 2 min (6mL, room temperature) at 0, 8, 24 and 32 h. After each erosive challenge, the toothpastes were applied neat onto the surface of specimens for 3 min without brushing and removed with distilled water. Between treatments the specimens were kept in artificial saliva. Enamel hardness, after the erosive challenge and toothpaste treatment was monitored using surface micro-hardness measurements. The surface of each specimen was imaged by SEM. A visual rating system was used to evaluate the condition of the enamel surface; results were analyzed by non-parametric statistical methods.

Results: As expected, repeated erosive challenge by a soft drink for total of 8 min significantly reduced enamel surface hardness (ANOVA, p < 0.05). No re-hardening of the surface softened enamel was observed in the group treated with fluoride-free toothpaste. Surface hardness of the softened enamel increased when the specimens were treated with the fluoride toothpaste and the two toothpastes with Zn-HAP (p < 0.05). In the SEM study, significant differences were found between the samples untreated and those immersed in Coca-Cola. The highest grade of damage was found in group with erosive challenge (Coca Cola) without toothpaste treatment, while the lowest grade was recorded in the samples treated with Zn-HAP toothpaste.

Conclusions: This study has confirmed that Zn-HAP toothpaste without fluoride is able to counteract the erosive effect of an acidic soft drink on dental enamel and in fact lead to remineralization of surface softened enamel as shown by a statistically significant increase in enamel hardness. Toothpaste with Zn-HAP resulted in significant enamel remineralisation of erosively challenged enamel, indicating that these toothpastes could provide enamel health benefits relevant to enamel erosion.

Comparison of two procedures on secondary prevention of dental caries

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Aim: Dental caries is the most common oral cavity disease and one of the major health problems in industrialized countries. Caries detection, at early stages of enamel demineralization, provides a better evaluation of disease and improves the success of primary and secondary preventive strategies, thus reducing as possible the tooth tissues injuries. Actually, detection and diagnosis of caries lesions relies on traditional tactile/visual inspection, radiography or new technological diagnostic tool based on light transmission, light fluorescence and other systems such as ultrasound and near infrared illumination. Oral radiographic examinations and traditional visual inspection methods, which are the most widely used in clinical practice, show low sensitivity and specificity. Their limit is the subjective

judgment and intra-examiner reliability. ICDAS II (International Caries Detection and Assessment System), through training/calibration sessions, has standardized traditional visual/tactile methods. While, the use of fluorescence camera allows quantitative assessment of dental caries with a high sensitivity, it does not require a specific operator training. The aim of this study is to evaluate the performance of two diagnostic methods of occlusal caries. Particularly, we compared the effectiveness of the ICDAS-II system and the fluorescence terminal (Proof) of VistaCam iX intraoral camera.

Methods: We examined 200 permanent molars and premolars with no restorative treatment. All teeth underwent oral hygiene, with rotating bristle brush and prophylactic pastes, and rinse and drying with air-water syringe. A calibrated and certified dental clinician examined all the occlusal teeth surfaces basing on the ICDAS II criteria, and assigned each one an ICDAS II code. The same surfaces were analyzed with the VistaCam iX Proof fluorescence based camera, with a positioner that ensured higher reproducibility. The related software assigned a numeric code and different shades of color, basing on bacterial activity, thus stating the extent and depth of demineralization.

Results: Statistical analysis, performed with Cohen's kappa and weighted kappa, concluded that there is an agreement between the two methods. Particularly, the ICDAS II method, in certain cases, might underestimate initial caries and overestimate deep caries. This shows how VistaCam iX Proof validates and strengthen the ICDAS II protocol considered the gold standard in the diagnosis of caries.

Conclusions: In conclusion, there is a correlation between ICDAS II and VistaCam iX Proof. Specifically, intraoral fluorescence camera demonstrated to be a useful diagnostic aid to the visual / tactile ICDAS II occlusal examination. Especially because it allows minimizing diagnostic errors and improving the visual examination; and, creating personal folders of patient, it provides a long term monitoring over time of remineralized lesions development.

Dentin erosion: preventive effects of different protective agents

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Aim: Dental erosion is the loss of tooth substance due to chemical processes not involving bacteria, caused by a variety of intrinsic and extrinsic factors. This loss of substance by erosion is a dynamic process.The aim of this in vitro study was to evaluate the preventive effects of different protective agents (Remin Pro, MI Paste Plus, Tooth Mousse, Biorepair, Biorepair Plus and Regenerate) on dentine erosion, measuring mean percentage weight loss. Dissolution of dentine under erosive challenges caused by soft drink was analyzed: specimens were weighed following each immersion period, with mean percent weight losses calculated.

Methods: Extracted permanent human teeth were cleaned of calculus and other debris. These teeth were previously stored in a 1% Chloramine-T solution and later they weresectioned into uniform slabs. Seventy permanent enamel specimens were randomly distributed to seven groups. Initial weights of all dentin specimens were performed. The fluoride pastes Remin Pro, MI Paste Plus, Tooth Mousse, Biorepair, Biorepair Plus and Regenerate were used in this study. A control group was treated just with tap water. The specimens then were immersed in an acid soft drink for a total of 32 min at room temperature. At the end, each specimen was dry and weighed. The mass loss was calculated as a percentage of that observed prior the fluoride pastes application. Weight loss data were subjected to Analysis of Variance (One-way ANOVA) followed by Bonferroni's post hoc tests.

Results: In the present study,the loss of dentin was taken in considerations over a short time period (8 to 32 minutes) in soft drink. The soft drink tested in this study was able to cause loss of dentine already starting from 8 minutes' exposure. Percent weight loss of specimens showed a linear progression in time. Specimen's application of fluoridated varnishes such as Biorepair or Regenerate, prior immersion in the acid soft drink, significantly protect dentin from demineralization. Otherwise, application of Tooth Mousse orBiorepair Plus showed statistically significant highererosivityand increased dentin demineralization during the interval from 24 min to 32 minutes of immersion in the acid soft drink.

Conclusions: In this in vitro study, the protective pastes that showed the less weight loss due to the acidic challenge are Biorepair and Regenerate. Remin Pro and MI Paste Plus although reached higher percent weight loss hardness values than the previous materials, otherwise application of Tooth Mousse or Biorepair Plus didn't protect dentin from demineralization from the third immersion in the acid soft drink. In conclusion, this study shows how susceptible is dentine to erosion by soft drinks. Toothpastes appeared to afford protection against erosion rather than accelerating dentin loss.

Health literacy in periodontally compromised diabetic patients: strategies for compliance improvement

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Aim: Diabetes is an increasing public health concern, affecting 415 million people worldwide and projected to rise to 642 million by 2040. Health literacy (HL) represents not only the skills needed by an individual to process health-related information, but also the demands of the health system in terms of the delivery of information or instructions. With the rising prevalence and severity of diabetes mellitus and its complicancies, such as periodontitis, the incorporation of tailored cultural strategies into diabetes management by health providers is important to promote the equity of the demands of the health system together with the individual's ability to effectively use oral-care information. Altough importance of supportive periodontal therapy has been well documented for diabetic patients, many studies have shown patient compliance to be poor. This report reviews some of the extensive literature in HL, focusing on the needing of improved compliance for diabetes patients.

Materials and Methods: Articles and other documents for this review were selected:
- by searching MEDLINE and related databases, such as Web of Science, CINAHL, ERIC;
- by consulting existing bibliographies;
- by using both forward and backward reference chaining techniques;
- by tracking recent international activities in HL;
- by reading contents in scientific society websites (for oral care and diabetes control and management).

Results: References that were primarily anecdotal or that were only peripherally related to the topic were excluded.According to HL suggestion, specific leaflet addressed to diabetic patients was written, focusing on compliance during periodontal therapy and long term benefits after high adherence to therapy. Focusing on the problem of the basic literacy level of the patient, the readability of the health-related materials that the patient is expected to read was analyzed. As suggested by literature, reading material was at the fifth- or sixth-grade reading level, rather than the 10th- or 11th-grade level at which many patient materials are written. It is suggested to choose simple, common words and short sentences and writing in the active voice and in a conversational and personalized style. Culturally appropriate relevant content focused on actions and behaviors rather than underlying principles is preferred. The purpose of the communication has to be clear, and essential information are presented in a direct and specific way. Aspects of layout, such as large mixed-case font, question–answer format, bulleted lists, and illustrations were preferred over other presentation formats.

Conclusions: There are several pathways via which HL influences important health outcomes, including the acquisition of new disease-specific knowledge, improving self-efficacy and adherence with self-care behaviors. Self-efficacy of diabetes self-care has been significantly associated with self-care behaviors and glycemic control. This positive behaviour is direcly linked to patients awareness of being compliant during periodontal therapy. Although the bi-directional relationship between diabetes and periodontitis has been well recognized, its importance in daily life has to be told to patients effectively.

Correlation between oral hygiene adherence and bleaching: a randomized controlled clinical trial

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Aim: This study aims at evaluating the motivational effectiveness of teeth bleaching in strengthening the adherence to home maintenance protocol measuring objective parameters.

Materials and Methods: Sixty patients (37 males and 23 females) in good systemic healthy conditions were selected among those ones requiring a bleaching treatment and enrolled for this study. They were all aged ≥ 18 years old and able to sign a written informed consent. Patients were randomly divided in Group 1 and Group 2. Full Mouth Plaque Score (FMPS) and Full Mouth Bleeding Score (FMBS) were collected to all patients using a CP 15 periodontal probe. Colour of teeth was evaluated using the VITA scale before performing any bleaching. All patients received an in office bleaching treatment. A cheeks and lips retractor was used (Optragate®) and a liquid dam (Ena Dam®) was applied to protect gums. A 1-2 mm layer of 35% hydrogen peroxide gel was applied on the vestibular surface

of cleaned and dried teeth. It was left thicken for 10 minutes and then removed with a vacuum. This procedure was repeated twice. After the last layer of gel was removed, water was used to wash the treated surfaces. Colour of teeth was reevaluated using the VITA scale. Liquid dam was removed and a remineralizing casein mousse was applied on the vestibular surfaces. Home maintenance instructions were given according to the Tailored Brushing Method (TBM) to both groups. All patients were asked to brush twice per day for two minutes with a medium multi angled bristles toothbrush (Gum Technique pro compact medium) with Enamel Plus® toothpaste, to complete the whitening and desensitizing action. Patients of Group 1 were asked to complete the bleaching procedure at home for 40 days. A special toothbrush (Ena White 2.0®) with a dispenser filled with 6% hydrogen peroxide gel was given to each patient and they were asked to use it after the TBM procedure as follows: to brush the vestibular surface of the anterior teeth for 1 minute and then to wash intensively with water. Each toothbrush was filled for 40 applications (20 days), but a recharge was given to them for a refill of other 40 applications for a total of 40 days of treatment. After 40 days ($\pm$ 5) FMPS, FMBS and VITA values were collected again to all patients. Statistical analysis was performed with t student test.

Results: No drops out were registered. All patients showed an improvement of the VITA values. Group 1 mean improvement was 6 tones. Group 2 mean improvement was 8 tones. At baseline the average FMPS was 27% in Group 1 and 29% in Group 2. After 40 days ($\pm$5) it was 11% in Group 1 and 22% in Group 2. This difference was statistically significant ($p<0,05$). At baseline FMBS was 13% in Group 1 and 12% in Group 2. At the end of the study it was 12% in Group 1 and 14% in Group 2. No statistically significant difference was found.

Conclusion: Nowdays bleaching procedures are efficient and safe. Our results show an improvement of patients concordance in home maintenance protocol. Bleaching should be considered not only a cosmetic procedure but also an important motivational strategy.

Piercing and oral health: a survey about risks and complications among piercing wearers

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Aim: The aim of the study was to verify the awareness of risks and complications of oral piercing among a group of adolescents and young Italian adults with intraoral piercings.

Materials and Methods: It was asked to complete an anonymous questionnaire to oral piercing wearers based on the awareness of systemic risks and oral complications of oral piercing. The questionnaire was available printed or on line and it also included questions about place of wearing and piercing cleaning. After questionnaire all participants received a brochure with some information about risks, complication and maintenance mode of piercing.

Results: A total of 287 piercing wearers filled the questionnaire aged between 16 and 40 years .
Data revealed that 63.8% received piercing in a tattoo and piercing shop, 6.4% in a jewelry, 4.3% in a medical office, 10.6% at home, 14.9% by himself . Only 44.7% declared . they had not been informed about systemic risks; 48.9% said they had not been informed about oral complications related to teeth and gums; only 36.2% declared to have been informed about all risks and complications. However, 72.3% declared to clean piercing regularly.

Conclusions: The general lack of awareness of individuals about risks and complications due to oral piercing should be addressed by some educational programs carried out by dentists and dental hygienists at school and in a dental office, and primarily aimed at piercers , and all the people who undergo this practice.

Evaluation of efficacy of Mucosamin® spray in oral mucositis treatment in patients undergoing hematopoietic stem cell transplantation: a randomized case – control study

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Aim: Oral mucositis is one of the most disabling inflammatory complications of oral mucosa in patients undergoing anticancer or immunosuppressive therapy and there is currently no standardized treatment for this pathology. The Mucosamin® is a spray preparation containing sodium hyaluronate combined with a pool of amino acids of precursors collagen, including L-Proline (0.75%), L-Leucine (0.15%), L-Lysine (0.1%) and glycine (1%), which acts on wound healing and pain management. The purpose of the study was to evaluate the clinical effects of Mucosamin® in wound healing and pain management in oral mucositis

after hematopoietic stem cell transplantation. It was also evaluated the importance of professional dental hygiene by dental hygienist in reducing the severity of oral mucositis as unique therapy or in addition to therapy with Mucosamin®.

Methods: It was designed a case-control study for a total of 137 patients undergoing Hematopoietic Stem Cell Trasplantation, divided into 4 groups:

- Group A: Professional oral hygiene + Mucosamin®
- Group B: Professional oral hygiene + standard treatment with chlorhexidine 0.20%
- Group C: Only Mucosamin®
- Group D: Only standard treatment with chlorhexidine 0.20%

The research systems used are: WHO mucositis scale, OMAS mucositis scale, periodontal recording, days of mucositis.

Results: The 87% of the entire sample developed mucositis, but patients of Group A developed fewer cases of mucositis compared to all other groups (67,7% of the patients of group A developed mucositis). Observing WHO mucositis Scale, group D developed the greater gravity of mucositis with 35.5% of the subjects, followed by group B (20.7%), group A (10.0%) and C (6.9%). However, it is observed that in group A the more frequent grade 1 (without lesions) in the 60.0% of patients, in group B is 17,2%, in group C is 31,0% and for group D is 9,7%. The OMAS Scale of mucositis confirmed the evaluation, showing that higher-grade lesions are found on group D. Finally, in group A lesions disappeared faster than other groups. All data are statistically significant (P value= 0,05). There is a statistically significant difference between the mucositis gravity on both scales among subjects who took the Mucosamin and those who were subjected to standard treatment with chlorhexidine 0.20%; since both groups were submitted to a session of oral hygiene operator dedicated and have the same initial periodontal condition, we can assume that the use of Mucosamin®, which has been assigned to Group A, played a decisive role on the appearance of lower degree of mucositis. The duration of mucositis seems related also on the oral hygiene treatment: there is a statistically significant difference between those who received both Mucosamin and oral hygiene and those who did not receive any treatment.

Conclusion: It would seem that the Mucosamin® plays a role in reducing the severity and, in part, of the duration of mucositis for. Moreover, the risk of developing high degree of mucositis is drastically reduced if the Mucosamin® is combined with debridement.

Elaboration of an educational campaign for oral hygiene in primary schools

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Aim: Dental caries risk is particularly high during the developmental age, with 621 million children with untreated dental caries in 2010 and a prevalence peak in 6-year old children (Kassebaum NJ et al., 2015). The aim of this pilot study was to carry out an educational campaign to improve the theoretical and practical knowledge of primary school students' about oral hygiene, in order to decrease the incidence of this pathology among children.

Methods: The pilot study was carried out at the Ancelle della Carità Primary School in Trieste on a sample of 60 students (7-10 year old). Participants answered a multiple-choice questionnaire at 3 time intervals: before attending the oral hygiene lectures (B - baseline, May 2016), immediately after the lectures (R1 - May 2016) and 5 months after the lectures (R2 - October 2016). The questionnaires included questions about dental caries, nutrition, anatomy of the oral cavity, their dental experience (through a VAS scale on anxiety associated to dental treatment) and prevention of oral pathologies. The educational approach adopted in the pilot study was based on active lectures characterized by theoretical, practical, and experimental steps, as well as supplementary activities when requested by students.

Results: The results showed that, at baseline, children's awareness regarding oral hygiene was unsatisfactory (only 53% of the answers were correct); after the lectures, an increase to 88% was observed, which remained consistent at the 5-month follow-up (85%). In particular, baseline data highlighted that children were sufficiently prepared about risk factors for oral health (especially sugar), but had little knowledge about any other prevention topics. After two lectures on oral hygiene and prevention significant improvements were obtained. Questions with increased correct answers included: bacterial plaque (B=29%, R1=87%, R2=72%); fluoride (B=41%, R1=93%, R2=80%); toothbrushing techniques (B=53%, R1=98%, R2=95%), toothbrushing pressure (B=43%, R1=97%, R2=97%) and toothbrushing frequency (B=74%, R1=98%, R2=100%). Students' positive attitude towards the dental visit also improved remarkably (B=46%, R1=84%, R2=87%). This pilot study demonstrated that a structured educational campaign could improve children's awareness not only through their theoretical and practical knowledge regarding the oral hygiene, but also through the development of a positive attitude

towards the dental experience.

Conclusions: As a consequence of these results, a higher degree of interaction between dental hygienists and the school environment is recommended in order to promote future large-scale primary prevention programs among children.

Oral hygiene in children: effects of different toothpastes on salivary ph values

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Aim: The objectives of this study were to: (1) register the frequency of teeth cleanings and other personal hygiene habits among schoolchildren; (2) verify the type and quantity of toothpaste used by subjects; (3) determine whether the type of toothpaste used may affect the salivary pH.

Methods: 105 children were enrolled, average age 8.9 $\pm$ 3.1 (range 2–12 y/o). Parents and children have been subjected to a face-to-face interview through a structured questionnaire. Subsequently we analysed in vitro 8 toothpastes used by children and 25 toothpastes mainly used by adults, measuring the specific pH and recording fluoride content. Furthermore, we measured the salivary pH (s-pH) of children before and after each teeth cleaning with a single application of toothpaste (with a known pH acid value). Finally twenty toothpastes (the most common used by subjects) were evaluated, in vitro, with respect to their cytotoxicity in human colon carcinoma cells culture (HT-29); viability of these cells was measured with an MTT assay. The data were analyzed statistically by ANOVA followed by

appropriate post hoc tests.

Results: Our results show that children's oral hygiene habit was good: they brushed their teeth twice a day (61%), for at least 2 minutes (64%). 50% of the children enrolled in our study used an adult toothpaste for daily oral hygiene. We also observed that 47% of children used mouthwash, many containing fluoride too. 47% of the toothpastes have been purchased in supermarkets, while 33% of them in pharmacies. The average concentration of fluoride in toothpaste for adult was 1450 ppm, while that of toothpastes for children was 770 ppm. In addition some of the toothpastes used both by adults and children presented a low pH acid values, ranging 3.96 to 9.42 for adult toothpaste and 3.93 to 7.69 for children toothpaste. Particularly we didn't get substantial changes in the s-pH values after teeth cleaning with toothpaste with a different acid pH value in vitro. Seven toothpastes showed a moderate cytotoxicity on HT-29 cells, with a percentage of viable cells between 77-92% ($P < 0.001$ versus control).

Conclusions: Children using adult toothpaste may develop a fluorosis, particularly who use a mouthwash at same time. Further studies are necessary to determine whether chronic use can impair the salivary pH value and, whether or not the influence on s-pH, the acidity of a single toothpaste may determine dental erosion or potential damages to the oral tissue. A main result of this study is that there is still a great lack of awareness of the proper guidelines in the selection and usage of toothpastes for children. Dental professionals should use their knowledge to help and motivate parents to properly supervise and assist their children's brushing, in order to reduce the potential risk of fluorosis and tissue damages.