

## Oral Communications

### BEHAVIOR

#### 1. EFFECTIVENESS OF THE HAND/EYES/MOUTH (HEM) TECHNIQUE IN BEHAVIOR AND IN LEVELS OF ANXIETY AND PAIN DURING THE INJECTION OF PTERYGOMANDIBULAR ANESTHESIA IN PRESCHOOLERS: RANDOMIZED CLINICAL TRIAL PILOT STUDY

Serra Mascarell M.<sup>1</sup>, Pina Sarrión M.<sup>1</sup>,  
Leyda Menéndez A.M.<sup>1</sup>, Álvarez Vidiga E.<sup>2</sup>,  
Ribelles Llop M.<sup>1</sup>

<sup>1</sup>Universidad CEU Cardenal Herrera. Valencia.

<sup>2</sup>Universidad de Sao Paulo. Sao Paulo, Brazil

*Introduction:* Local anesthesia causes many children to feel fear and anxiety; however, it is essential when conducting a successful and relaxed treatment. Non-pharmacological behavior guidance techniques are used during the application of anesthesia to reduce this fear, especially with preschool patients.

*Objective:* To evaluate the effectiveness of the “Hand-Eyes-Mouth” (HEM) distraction technique in levels of anxiety and pain, and the behavior of preschool children during pterygomandibular anesthesia, comparing it to the conventional technique (covering the patient’s eyes). To assess changes in heart rate before, during and after the application of anesthesia.

*Material and methods:* The sample was formed by 20 children from 3 to 5 years and 11 months of age who had never had an injection of local anesthesia and who required treatment involving inferior alveolar nerve block. The children were randomly assigned into two groups, according to the technique used: HEM and conventional. Anxiety and pain were assessed with the use of the Facial Image Scale and the Wong-Baker Faces Pain Rating Scale, respectively. Patient cooperation was assessed with the use of the Frankl Scale for Behaviors. The Chi-square test and the Wilcoxon test were used for the statistical analysis of the data.

*Results:* There were no statistically significant differences ( $p = 0.118$ ) between the initial anxiety felt by the patients who were treated with the conventional technique and those who were treated with the HEM technique, nor in the anxiety they felt 7 days post-anesthesia ( $p = 0.383$ ). In the patients who were treated with the HEM technique, the mean anxiety level decreased in time, while those who were treated with the conventional technique experienced an increase. These results did not reach statistical significance ( $p = 1$ ). We did not see a statistically significant difference ( $p > 0.005$ ) between

the groups studied in any of the moments in which the heart rate was recorded. In the HEM group, heart rate remained more stable and rose less than in the patients treated with the conventional technique but without reaching statistical significance. There were no statistically significant differences ( $p = 0.613$ ) in the self-referred pain felt by the patients in both groups studied, nor in the behavior presented by the patients ( $p = 0.511$ ).

*Conclusions:* Both behavior management techniques have the same effectiveness in preschool patients during inferior alveolar nerve block.

#### 2. A STUDY OF THE PREVALENCE OF DENTAL ANXIETY AND THE ETIOLOGIC FACTORS INVOLVED IN A SAMPLE OF SCHOOL CHILDREN

López Figueredo L.F., Gutiérrez Jáuregui N.E.,  
Álvarez Muro T., Ribelles Llop M.

Universidad CEU Cardenal Herrera. Valencia

*Introduction:* Dental anxiety and fear are two phenomena that hinder the management of the child’s behavior and affect their behavior during a dental consultation. There is scientific evidence that shows that dental anxiety is a great obstacle in the search for a suitable professional when seeking dental treatment, and the patient’s quality of life may even be compromised. An assessment of the child’s level of anxiety before the treatment is the key to success, in order to redirect their behavior towards the required dental treatment and to prevent future collaboration commitments in the medium and long term.

*Objectives:* To determine the prevalence of dental anxiety and its link to previous experiences and parental anxiety in a sample of children aged between 6 and 14 who were seeking treatment at the Dental Clinic of the Universidad CEU Cardenal Herrera (Moncada, Valencia).

*Material and methods:* The study was of the correlational research type, since the degree of relationship that existed between two or more variables was measured, and also cross-sectional not-experimental, because data was collected in a single moment in time. Basic information was collected from both parents and children, and Corah’s modified scale was applied individually. With regard to the children, we also collected information on the type of treatment to be carried out, and a survey of previous experiences was conducted.

*Results:* The final sample was made up of 116 children. Of these, 15.52% had a severe level of anxiety, 12.93% high, 37.93% moderate, 29.31% mild, 0.86% low, and 3.45% none at all. With regard to the patients’ level of anxiety in relation

to the parents' level of anxiety, statistically significant evidence was not found. The treatment that caused the highest level of anxiety was pulpotomy (40%). Patients with traumatic or negative previous experiences had higher anxiety levels and percentages than those whose previous experience had been positive or had no experience at all. Gender and age were important factors related with dental anxiety, and younger females had higher levels of anxiety.

*Conclusion:* The most frequent causes of dental anxiety were previous traumatic experiences and the attitude learned from the environment. No relationship was found between the patient's level of anxiety and the parents' anxiety.

### 3. THE USE OF NEW TECHNOLOGIES DURING PEDIATRIC DENTISTRY VISITS FOR THE DESENSITIZATION OF CHILDREN WITH AUTISM SPECTRUM DISORDERS (ASD)

**López Jiménez A.J., Padilla Miranda M.,  
Gómez Clemente V., Martínez Pérez E.M.,  
Planells del Pozo P.N.**

*Universidad Complutense de Madrid. Madrid*

*Introduction:* Autism spectrum disorders (ASD) are a group of disorders that affect child development. Currently, according to the new diagnostic manual, the DSM-5, patients with autism must present with four parameters: limitations in social interaction and communication; repetitive behavior and life patterns; symptoms present since childhood and, lastly, that all the above criteria hinder the affected person's everyday life. These children's characteristics necessitate the implementation of systematic desensitization protocols in preparation for any situation, including dental treatment. The growing demand for information and communication technologies (ICT) has led us to update these protocols, traditionally based on pictograms and augmentative communication. This is why we believe it is necessary to develop and implement technological alternatives in the dental practice to guide us towards an effective process of desensitization in dental treatment, individualizing each case and treatment.

*Objectives:*

- To create, through the use of new information and communication technologies (ICT), a specific protocol for pediatric dental procedures in children with autism.
- To analyze the effects of the implementation of the desensitization protocol through the use of ICT.

*Materials and methods:* The sample was composed of 8 patients receiving treatment from professionals specializing in Integral Dental Care for Children with Special Needs (School of Dentistry, UCM), diagnosed with ASD, with ages ranging between 5 and 13 years.

After reviewing several applications, we chose E-Mintza, as it allows us to customize the information that is presented in advance in desensitization process for pediatric dental treatment. The information available in E-Mintza was adjust-

ed individually for each child by introducing videos about procedures performed on patients and specific photos to help us complete the information provided by conventional pictograms.

*Results and discussion:* We tested the effect of the desensitization protocols, by analyzing the emergence of disruptive behaviors, before and after the application of the same, in each of the children and for different procedures.

*Conclusions:*

1. ICT allow us to communicate effectively with the patient with ASD, and these tools are as effective as conventional pictograms.
2. The pediatric dentist, through the use of ICT, is able to display key information in advance about the dental treatment.
3. ICT allow a continuous and extensive process of desensitization on a clinical and outpatient level, and it even allows us to work with educators and families, systematically incorporating oral health as an important area of a patient's life.

### 4. PREFERENCES EXPRESSED BY CHILD PATIENTS AND THEIR PARENTS REGARDING THE PEDIATRIC DENTIST'S CLOTHING

**Wang H.Y., Lorente Rodríguez A.I., Guinot Jimeno F.,  
Cuadros Fernández C., Yuste Bielsa S.**

*Universitat Internacional de Catalunya. Barcelona*

*Introduction:* On the first visit, we do not only exchange medical information about the treatment, but also build trust for the future, thus achieving a greater adherence to the treatment. The professionals' clothing, the way they speak and interact with patients makes communication between the pediatric dentist and the child one of the most important challenges within the consultation.

*Objectives:* To determine children's preferences with regard to the dentist's gender, and if there is a preference, the type of clothing the children and their parents would prefer, in order to understand if clothing is an influence in the relationship between child patient and dentist during the dental treatment.

*Material and methods:* This work is part of a multicenter study, to be conducted in conjunction with the Hebrew University of Jerusalem and the Catholic University of Uruguay. A total of 400 questionnaires were handed out: 200 aimed at parents and 200 aimed at boys/girls who sought treatment at the University Dental Clinic of the Universitat Internacional de Catalunya. The subjects were interviewed in the waiting room. They were given two sheets corresponding to the questionnaire and another one with 10 images of a woman and a man wearing different types of dentist's clothing; there were a few questions concerning the dentists' clothing.

*Results:* We noted that 65% of the surveyed child patients preferred female pediatric dentists. The clothing that was

most often chosen by the boys/girls was pink for the woman, chosen by 33% of the children, followed by the clothing with a kiddy design worn by the female dentist (11.5%); while the one that was preferred the least was the informal clothing worn by the male dentist (3%). A majority of the parents (66.5%) said that the way dentists dress influences behavior, while 27.5% said that it has no influence. Only 6% of the parents gave a neutral opinion with regard to whether the way a dentist dresses influences the relationship with their son/daughter; 75.5% said it does influence, while 19% said that it has no influence. Only a 5.5% said "it doesn't matter".

*Conclusions:* It can be concluded that the pediatric dentist's appearance is one of the factors that may influence the behavior of a child in the dentist's office, as well as the relationship between professional and child.

## 5. DESENSITIZATION AND ORAL HEALTH PROGRAM IN CHILDREN WITH ASD AT THE ARAYA SCHOOL

**Pereda Auriguierry P., Semisa A., Costa Ferrer F., Beltri Orta P., López de la Hoz M.**

*Universidad Europea de Madrid. Madrid*

*Introduction:* Autism Spectrum Disorders (ASD) are defined as developmental disorders that, because they show a wide variety of clinical expressions, are the result of multifactorial dysfunctions in the development of the CNS, in which a set of capabilities associated with social interaction, communication, and imagination is qualitatively altered. The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; 2013) shows the symptoms of people with autism as a continuum that goes from the mildest to the most severe, establishing a new, more useful, and more accurate way to diagnose the disorder.

*Objectives:* The objective is to allow patients with ASD to receive dental treatment at the dental clinic through a systematic desensitization program.

*Material and methods:* The study included 15 children between 3 and 18 years of age, who were attending school at the Autism Center in Madrid. The desensitization was carried out in three phases; a first desensitization conducted by educators with pictograms and support material provided by the university. The second phase carried out the same desensitization protocol with educators and dentists, followed by clinical assessment and treatment in a portable chair and mobile equipment brought to the school. And in a third phase, in cases where this was necessary, the patients attended the university clinic with their parents and teachers for treatment.

*Results:* The preventive and maintenance program at the school was carried out correctly. Patients treated at the Universidad Europea Madrid successfully received the necessary treatments.

*Conclusions:* It would be necessary and convenient for dentists to be familiar with the characteristics of people with

autism and with systematic desensitization protocols. This would avoid situations of rejection and the chances of having to carry out dental procedures with sedation or general anesthesia, which are needed to provide the right level of care in the dental consultation, would be lowered. This should be started in the early stages of life, in order to prevent and support these patients' oral health.

## ORAL MEDICINE

### 6. A BIOCOMPATIBILITY STUDY OF SILK FIBROIN IN STEM CELLS DERIVED FROM DECIDUOUS TEETH

**Pecci Lloret M.P., Collado González M., García Bernal D., Oñate Sánchez R., Rodríguez Lozano F.J.**

*Universidad de Murcia. University Dental Clinic. Murcia*

*Introduction:* Stem cells are undifferentiated cells that present a high clonogenic capacity for self-renewal and may differentiate into several cell lineages. Inside the mouth, they can be found in several locations: deciduous teeth (SHEDs), periodontal ligament (PDLSCs), dental follicle (DFSCs), apical papilla (SCAP), gingival tissue (GMSC), inflammatory periapical tissue (PL-MS), oral mucosal lamina propria (OMLP-PCs), mandible bone marrow (OMSCs) and dental pulp (DPSCs). Moreover, silk fibroin represents a natural biomaterial that works optimally in regeneration and may be used in pulp regeneration.

*Objective:* The objective of this study was to determine the biocompatibility of silk fibroin with stem cells from human exfoliated deciduous teeth (SHED).

*Material and methods:* From exfoliated deciduous teeth, we extracted the human dental pulp (hDP), which was enzymatically and mechanically dispersed; we conducted the cell count and the estimation of the cell viability and subsequent planting of stem cells from human exfoliated deciduous teeth (SHED). We then prepared a three-dimensional scaffold of silk fibroin where 5,000 cells were planted and conducted the analysis of the mesenchymal phenotype, proliferation, apoptosis, and morphology of the cells after 24 hours, 48 hours, and 72 hours. The analysis of phenotype and apoptosis was conducted by flow cytometry. Cell proliferation was determined by Alamar Blue and morphology on the scaffold was analyzed by scanning electron microscopy.

*Results:* After 72 hours of growth on the fibroin scaffolds, our study cells continued having their stem cell phenotype of mesenchymal origin, with a cell viability that was greater than 95%, and optimal growth and morphology in the end.

*Conclusions:* The results of this in vitro study support the use of silk fibroin scaffold in tissue engineering with stem cells from deciduous teeth. Future in vivo studies are needed to confirm their possible use in pulpotomy.

## 7. EVALUATION OF DENTAL AGE IN A SAMPLE OF CHILDREN WITH DOWN SYNDROME

**Bartolomé Villar B.<sup>1</sup>, Paz Cortés M.<sup>2</sup>,  
Mourelle Martínez M.R.<sup>2</sup>, de Nova García M.J.<sup>2</sup>,  
Ávalos Sanfrutos N.<sup>2</sup>**

<sup>1</sup>Universidad Europea de Madrid. Madrid. <sup>2</sup>Universidad Complutense de Madrid. Madrid

*Introduction:* Dental age is one of the methods most frequently used today to estimate biological age, as it is a reliable and easy to perform method. There are several methods applied to its study using intraoral and extraoral X-rays, the most widely used being the method devised by Demirjian et al. Down syndrome is a chromosomal disorder characterized by disturbances in various systems of the body (cardiovascular, endocrine, nervous...) including disturbances in the stomatognathic system; among these we may note the presence of an ogival palate, macroglossia, microdontia, tooth agenesis, a delay in eruption, a tendency towards Class III, etc.

### *Objectives:*

- To compare the dental age estimated by the method devised by Demirjian with the chronological age of children with Down syndrome, and observe if there are statistically significant differences between the two.
- To compare if there are significant differences between the dental age estimated and the chronological age in a group of men and women.

*Materials and method:* We examined 52 panoramic x-rays of children with Down syndrome who sought treatment from professionals specializing in Dental Care for Children with Special Needs (School of Dentistry, UCM), between 5 and 16 years of age. Dental maturation was studied by the method devised by Demirjian et al. by a single examiner. The statistical analysis was conducted through the use of the SPSS22.0 program for Windows.

*Results:* After the analysis of the results, we found that the average chronological age in the total sample was higher in all age groups except for the 10 and 13-year olds, compared to the average dental age. After analyzing the sample by gender, we found for the girls an average estimated age that was lower than the actual age, except for the 13 and 15-year olds; for the boys, we found similar results with the exception of the 10 and 12 year-olds, where average age was higher than chronological age. We found that 71.87% of the males had an estimated age that was lower than the chronological age, compared to 75% in the females.

### *Conclusions:*

1. Patients with Down syndrome had an estimated dental age that was significantly lower than their chronological age, the average difference between both being 0.53 years.
2. Girls with Down syndrome had an estimated age that was significantly lower than actual age, but this was not the case in the group of boys.

## 8. THE USE OF INTRA-LIGAMENTAL ANESTHESIA WITH AN ELECTRONIC SYSTEM FOR PULPOTOMIES

**Prol Castelo A., Álvarez Congost C., Diniz Freitas M.,  
Abeleira Pazos M., Limeres Posse J.**

Universidad de Santiago de Compostela. A Coruña

*Introduction:* The administration of local anesthesia is one of the procedures that causes the most discomfort and anxiety to patients. In recent years, different techniques have been proposed to improve this experience in the dental consultation. One of the most recent is anesthesia with electronic control of infiltration.

*Objective:* To carry out a pulpotomy in primary molars with intra-ligamental anesthesia (ILA) and the use of the electronic system called The Wand (Inibsa, Barcelona, Spain) (ILA-W) and to compare their clinical efficacy with that of the conventional technique (ILA-C) in terms of comfort for the patient and anesthetic depth reached.

*Material and methods:* The study group was formed by 15 patients between 6 and 8 years of age, with no experience of previous dental treatments, in need of pulp treatment in both of the primary first mandibular molars. The pulpotomies were carried out in two sessions by administering ILA-C and ILA-W in a random way. The discomfort perceived by patients during anesthetic infiltration and treatment was measured with the Wong-Baker scale. To measure the dentist's perception of discomfort, we used the FLACC scale. The overall behavior of the patient during the treatment was evaluated with the Frankl scale.

*Results:* In all patients, the treatments were carried out with ILA without the need for other techniques as reinforcement. A lower level of discomfort was perceived by the patients who received the ILA-W technique at the time of infiltration, as well as during treatment, compared with ILA-C. The discomfort perceived by the dentist during anesthetic infiltration was similar with both systems. The behavior during treatment was slightly more positive when the treatment was carried out with ILA-W.

*Conclusions:* The ILA-W system seems to provide a more comfortable management of pediatric patients than the ILA-C, which in turn may have an impact on a better behavior during the treatment.

## 9. ORAL PATHOLOGY IN PRADER-WILLI SYNDROME

**Munné Miralvés C.<sup>1</sup>, Cahuana Cárdenas A.<sup>2</sup>**

<sup>1</sup>Universitat de Barcelona. Barcelona. <sup>2</sup>Hospital Sant Joan de Déu. Barcelona

*Introduction:* Prader-Willi syndrome (PWS) is a rare disease, due to a "complex genetic multisystem disorder that

arises from the lack of expression of the genes located on chromosome 15q11-q13 of paternal origin". The peculiarity of this syndrome is the presence of eating disorders. The first stage involves a difficulty eating and a difficulty gaining weight. During the second stage bingeing develops, and if not controlled, obesity will arise.

**Objective:** To determine the most frequent oral disease in PWS described in the literature and to compare these to a population of patients with PWS controlled in a hospital. Additionally, a protocol for prevention, monitoring and treatment of this syndrome was implemented.

**Material and methods:** We carried out a review of the literature, using the PubMed database, on the most common oral diseases in patients with PWS. Secondly, we assessed the medical histories of 18 children aged 0-18 with PWS, who received treatment at the Sant Joan de Déu Hospital, establishing during the first visit, their age and oral disease. Additionally, we evaluated in each patient their progress during the follow-up period.

**Results:** In the first visit, the average age was 4.4 years, and we estimated that 66% of the patients had caries, the rate of caries being 4.72. In the follow-up, there was an average of 7 visits per patient, and we observed: malocclusion in 33% (presenting more frequently a jaw discrepancy), xerostomia in 27%, bruxism in 27%, dental injury in 22%, ectopic eruption in 16%, and angular cheilitis in 11%. During the last check up, we observed that the average age was 8.2 years, and the rate of caries was 0.22.

**Comment:** The high initial incidence of caries may be due to low salivation and the preference of these patients for carbohydrates due to bingeing.

**Conclusions:** In the study, we showed that monitoring and the application of prevention measures for these patients improve oral disease and above all caries. Knowledge of the syndrome may help us to improve their oral health.

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## ORTHODONTICS

### 10. HARMFUL ORAL HABITS. DO THEY ALWAYS PRODUCE MALOCCLUSION?

**Moscoso Eid M.E., Briz Fernández S., Borrell García C., Carmona Santamaría M., Ribelles Llop M.**  
*Universidad CEU Cardenal Herrera. Valencia*

**Introduction:** Oral habits may change the position of the teeth and the relationship or the way the dental arches are shaped, and this may cause malocclusions. Malocclusions, according to the World Health Organization (WHO), occupy the third place in terms of prevalence of oral diseases that affect the human being. Harmful oral habits are one of the main causes of disturbances in the oro-facial organs and mus-

cles, which affect important processes in the human being, such as breathing, chewing, swallowing, sucking, articulation and phonation.

**Objectives:** The objective of the study was to find out the possible link between harmful oral habits and malocclusion in a sample of children under four years of age in the province of Valencia.

**Material and methods:** A cross-sectional, descriptive study was conducted on a sample of 190 children from 7 months to 4 years of age attending different kindergartens in the province of Valencia. The study took place in two parts. Firstly, the parents were given a questionnaire about food and their children's habits, and secondly, there was a clinical examination. We conducted the statistical analysis with the R-Studio program. A total of 52 oral habits and malocclusions were studied as variables. For the comparison of the variables, we used the Chi-square statistical technique with a significance level of 95% ( $p < 0.05$ ).

**Results:** Of the total number of children examined, 52% presented a habit, compared to 47% who did not have any. The most prevalent habit was pacifier sucking (37%), followed by thumb sucking (7.8%), lip sucking (5.7%), mouth breathing (4.7%), nail biting (3.6%), atypical swallowing (1.5%), and lingual interposition with 0.5%. We found a statistically significant relationship between anterior open bite and pacifier sucking habits ( $p = 0.026$ ), atypical swallowing ( $p = 0.022$ ) and lingual interposition ( $p = 0.03$ ). A positive association between the use of pacifiers and crossbite was obtained ( $p = 0.021$ ). Also, we obtained a statistically significant association between lip sucking and overbite ( $p = 0.01$ ), and between oral breathing and changes in the morphology of the palate ( $p = 0.027$ ).

**Conclusions:** We found that 52% of the children studied had some form of harmful oral habit. Pacifier sucking was the most predominant habit in the sample (37%). Disturbances in terms of anterior open bite, crossbite, overbite and changes in the morphology of the palate may be associated with the presence of oral habits.

### 11. POSTERIOR CROSSBITE DURING THE EARLY PHASES OF CHILD DEVELOPMENT. A LONGITUDINAL STUDY

**Franco Varas V.<sup>1</sup>, Gorritxo Gil B.<sup>1</sup>, Rámila Sánchez E.<sup>1</sup>, Franco Varas N.<sup>2</sup>**  
*<sup>1</sup>School of Medicine and Dentistry. Universidad del País Vasco. Vizcaya. <sup>2</sup>Práctica privada de la Odontología*

**Introduction:** The period during which the primary dentition is complete in the oral cavity is brief. However, maintaining the integrity of this dentition is essential for it to function properly, as well as for the correct development of the oral cavity. The disturbances in occlusion during this early dentition phase are very frequent as the etiological factors are numerous and varied. The approach and early treatment of

malocclusions should be planned in order to take advantage of the elasticity of bone tissue at this age. This will serve to eliminate the possibility of further alveolar bone deformation, to correct the eruption path of the permanent tooth buds and to normalize the development of the temporomandibular joint.

*Objective:* To study the prevalence of posterior crossbite in the primary dentition and to analyze how this dentition develops during the transition phase to the mixed dentition.

*Materials and methods:* A longitudinal epidemiological study was carried out on a sample of 225 children who were aged between 2 and 10 years in the Autonomous Community of the Basque Country. The data was obtained by means of clinical examinations of the children, and the presence of bilateral positive posterior overjet was registered together with posterior crossbite and scissor bite in both dentitions.

*Results:* 16% of the sample studied had posterior crossbite in the primary dentition (10.7% unilateral, 3.5% bilateral and 1.8% posterior crossbite in a single tooth).

According to age group, the presence of this malocclusion in the 4-6 year age group was more common (21.6%) with regard to the younger children (7.7%). In the follow-up of transverse malocclusion, 32 of the 36 posterior crossbites in the primary dentition were maintained in the mixed dentition (100% of the bilateral, 100% of the unilateral and 50% of those affecting a single tooth). In half the cases an increase was observed in the number of teeth involved in crossbite, which extended to the anterior level.

*Conclusions:* Posterior crossbite did not correct spontaneously with the change in dentition. A continuing crossbite leads to occlusal instability, which causes a deviation in facial growth and development. It also causes a transverse disturbance leading to facial asymmetry that increases the possibility of future skeletal, dentoalveolar, muscular, joint and aesthetic problems.

## 12. EARLY TREATMENT FOR CLASS III MALOCCLUSION WITH A MAXILLARY EXPANDER AND FACE MASK

**Menéndez Díaz I.<sup>1</sup>, Muriel J.D.<sup>2</sup>, Cobo Díaz T.<sup>1</sup>, González Chamorro E.<sup>1</sup>, Álvarez Abad C.<sup>1</sup>**

<sup>1</sup>Clínica Universitaria de Odontología. Sección de Odontopediatría. Universidad de Oviedo. Oviedo. <sup>2</sup>Instituto Asturiano de Odontología. Oviedo

*Introduction:* The use of the face mask is an orthopedic and dentofacial procedure used for the treatment of skeletal class III malocclusion that seeks to move the upper jaw forwards, or to stimulate growth in this direction. In addition, its use in conjunction with an expander favors the development of the jaw not only in a transverse direction but it also improves the sagittal effect.

*Objectives:* The purpose of the present study was to evaluate the effects of expander and face mask treatment in children with class III skeletal malocclusion.

*Material and methods:* 30 children were treated with an expander and face mask. Their mean age at the start of the treatment was 8.06 years and at the end it was 9.63 years. The patients were evaluated radiographically before and after treatment to observe the skeletal changes that had taken place and the changes in the upper airways. The data was analyzed by means of a paired sample T-test for significance.

*Results:* When the changes that occurred during the treatment were compared, favorable skeletal and airway changes were found that were statistically significant.

*Conclusions:* To conclude, maxillary expansion in conjunction with a face mask proved to be an efficient form of treatment for the early treatment of skeletal class III malocclusion, while playing a fundamental role in the prevention of OSAHS in children.

## 13. THE RELATIONSHIP OF ORAL MALOCCLUSION WITH NUTRITIVE AND NON-NUTRITIVE HABITS IN SCHOOL CHILDREN

**Alcaina Lorente A., Cortés Lillo O., Guzmán Pina S., Garrido Poveda N.**

Universidad de Murcia. Murcia

*Introduction:* Oral habits are acquired habits as a result of the continuous repetition of a series of acts that serve to calm an emotional necessity. All abnormal habits modify the position of the teeth and the shape and relationship that the arches have with each other. We have to differentiate nutritive from non-nutritive habits. These habits should be identified early for treatment to be successful.

*Objective:* To determine the prevalence of malocclusions in a group of school children and the possible relationship with oral habits.

*Material and method:* A descriptive study was carried out among 113 school children aged between 3 and 8 years who belonged to two schools in Albacete. The parents participated in surveys with regard to oral habits. The children underwent a clinical examination in order to diagnose malocclusion, in which Angle classification and molar relationship was noted and the existence or not of overjet, crossbite, open bite, tongue thrusting, oral breathing and lip interposition. The Chi-squared test was applied in order to determine the association between variables. The hypotheses were set with a significance level of  $p < 0.05$ .

*Results:* In our study there was a prevalence of children with Class II malocclusion of 34.5%. The most common malocclusions were overjet (33.6%), lip interposition (15%), tongue habit (11.5%), crossbite (10.6%), open bite (9.7%) and oral breathing (7.1%). There was a statistically significant relationship ( $p < 0.05$ ) between habits such as nail biting ( $p = 0.038$ ) and snoring at night ( $p = 0.001$ ) with overjet. There was also a statistically significant relationship between snoring at night ( $p = 0.037$ ) and class II malocclusion, and finger sucking habit (0.04) with tongue thrusting. Lastly, there

was a statistically significant relationship between pacifier habit for more than 2 years ( $p = 0.0004$ ) and prolonged bottle-feeding ( $p = 0.047$ ) with crossbite.

**Conclusions:** Non-nutritive sucking and prolonged bottle-feeding during the first months of life are the main risk factors for developing malocclusions such as a class II molar relationship, overjet, crossbite and tongue thrusting. Early diagnosis of these habits can prevent malocclusions.

#### 14. CHANGES IN THE UPPER AIRWAY WHEN TREATING CLASS II MALOCCLUSION PATIENTS WITH A TWIN-BLOCK APPLIANCE

Entrenas Valle I.<sup>1</sup>, Muriel J.D.<sup>2</sup>, Cobo T.<sup>1</sup>, Menéndez I.<sup>1</sup>, Álvarez Abad C.<sup>1</sup>

<sup>1</sup>Instituto Asturiano de Odontología. Clínica Universitaria de Odontología. Odontopediatría. Universidad de Oviedo. Oviedo. <sup>2</sup>Instituto Asturiano de Odontología. Oviedo

**Introduction:** Apnea-hypopnea (SAHS) is a very common problem during childhood. It is a breathing disorder that arises during sleep as a result of anatomical and functional disturbance in the upper airways (UA). Although tonsil or adenoid hypertrophy is the main etiological factor in pediatric patients and surgery is the treatment of choice, the functional orthopedic option for developing the jaw, which is linked to upper airway increase, is one of the preventative and therapeutic options for this syndrome. *Twin-Block* is a functional appliance which, as its name suggests, has two removable appliances. These modify the occlusal inclined plane using bite blocks that interlock by means of a 70° ramp that guides the mandible to a more forward position, correcting the relationship of the jaws, which produces a more harmonious profile.

**Objectives:**

- To assess the changes produced in the UA after the use of the *Twin-Block* in growing patients with Class II malocclusion.
- Assess the efficiency of *Twin-Block* in SAHS patients, in oral breathers and/or snorers
- Cephalometric changes before and after the use of the *Twin-Block* in patients with reduced UA.

**Materials and methods:** *Twin-Block* was chosen as the functional appliance for treating patients with mandibular retrusion, class II malocclusion, and to assess the changes produced in the UA. 20 patients were included in the study aged between 8 and 12 years, with a mesofacial and branchy-facial face patterns. They all underwent an initial telerradiography before the use of the *Twin-Block* appliance and, after a year approximately of treatment, a new telerradiography was performed. By means of Mc Namara analysis of the upper airways, the changes produced after the treatment with a mandibular appliance were evaluated.

**Results:** After 12-18 months of treatment increased UA volume was observed, which was more significant at a naso-

pharyngeal level. The snorers and/or breathers showed a satisfactory improvement.

**Conclusions:** The *Twin-Block* is a preventative and therapeutic alternative for treating sleep-related breathing disorders, as given the correction in mandibular retrusion there was increased UA volume. The efficiency of the mandibular appliance depends on patient collaboration.

#### SURGERY. CARIES

#### 15. ANALYSIS OF THE DENTAL CHARACTERISTICS OF AN IMMIGRANT POPULATION IN MADRID

Riolobos González M.F.

Universidad Alfonso X El Sabio. Madrid

**Introduction:** The aim of this study was to analyze the mesiodistal diameter of permanent teeth and the relationship between both arches among a population of Ecuadorian immigrant residents in Madrid, given that this is the South American country with the most immigrants in Madrid. Since the reference tables for orthodontists are based on North American Caucasian subjects, the need for an analysis and standards regarding tooth size for this population was observed.

**Objectives:** To determine the mesiodistal diameter of the permanent teeth including the first molar in both arches according to sex. To compare the mean mesiodistal size of each tooth with the opposite tooth in the same arch. To calculate the anterior bone-tooth discrepancy and total Bolton index.

**Material and method:** A cross-sectional, descriptive and observational study was carried out. A total of 125 children aged 8 to 18 years who completed the inclusion criteria were selected. The mesiodistal diameter was measured with digital calibration. The measurements, standard deviation and percentages were calculated. Students T-test for independent samples was used. The total and anterior Bolton indexes were calculated.

**Results:** Differences in tooth size were found between the sexes that were not statistically significant, except for the lower canine, which was greater in men ( $p = 0.007$ ). All the data met normality in the box plot distribution analysis. The total ratio was 91.64 (SD 1.90) similar to the Bolton index (91.30). The anterior ratio was 78.83 (SD 2.58), which was greater than the Bolton index (77.20).

**Conclusions:** The teeth of the men in the Ecuadorian population in this study were larger than those of the women. There were no statistically significant differences between opposite teeth, without sexual differentiation. When comparing gender, there was an exception with teeth 33 and 43 that were significantly larger in men. Bolton's SD is not a good guide for prevalence in tooth size discrepancies for the Ecuadorian population.

## 16. THE PREVALENCE OF MOLAR-INCISOR HYPOMINERALIZATION (MIH) IN A SAMPLE OF SCHOOL CHILDREN AGED 6 TO 12 YEARS

Reynoso Garza N.P., Kantaoui Kantaoui J.,  
Gavara Navarro M.J., Ribelles Llop M.  
*Universidad CEU Cardenal Herrera. Valencia*

*Introduction:* Molar-incisor hypomineralization (MIH) is a condition but its etiological factors remain unknown. It is probably multifactorial and systemic. It affects 1 in 4 permanent molars and it is sometimes associated with permanent incisors. The world prevalence varies between 2.8%-40% and the mild form is the most prevalent among the populations studied.

*Objectives:* The main objective of this study was to determine the prevalence of MIH in a sample of Valencian children aged 6 to 12 years.

*Material and method:* A descriptive observational study was performed using a sample of 122 individuals (43 boys and 79 girls) in two primary educational centers in the province of Castellón. School children with the 12 indicative teeth (4 permanent first molars and 8 permanent incisors) were included after the parents had signed the informed consent form, and providing they were at school the day of the examination. The children excluded from the study had physical limitations that could hamper the examination, children with fluorosis, tetracycline stains, amelogenesis imperfecta and those with orthodontic brackets. The children brushed their teeth, and after checking the teeth present, MIH detection was carried out of the surfaces of the indicative teeth, using a flat intraoral mirror, dental probe and halogen light in order to be able to see the demarcated opacities more precisely. These had to be greater than 2mm in size to be included.

*Results:* The prevalence of MIH was 20.49%. On analyzing the gender factor, the boys had 23.26% and the girls 18.99%. However, statistically significant differences were not found among them. The most affected tooth was 2.6 while teeth 1.2, 2.2 and 3.1 were not affected. With regard to location, statistically significant differences were not found ( $p = 0.727$ ), and the maxilla had the greatest number of teeth affected 51.25%. Lastly, the degree of MIH severity that was found more commonly was mild, and this reached 47.06%, followed to a lesser extent by moderate MIH 30.39%, while 22.55% had the severe form.

*Conclusion:* MIH was a very common dental defect among the participants of the study. The condition affected mostly the children aged 7 in the study, in addition, there was no prevalence to gender or to area of appearance.

## 17. COMPARATIVE CLINICAL STUDY BETWEEN THE APPLICATION OF PORTLAND CEMENT AND MINERAL TRIOXIDE AGGREGATE (MTA) IN PRIMARY MOLAR PULPOTOMIES

Barreiro López S., Maroto Edo M.,  
Saavedra Marban G., Barbería Leache E.  
*Universidad Complutense de Madrid. Madrid*

*Introduction:* Pulpotomy is the most common pulp treatment carried out in the area of pediatric dentistry. Many materials have been studied and applied, and the material that currently appears to have the best biological results is mineral trioxide aggregate (MTA). Recently, the scientific literature has shown an interest in Portland Cement (PC) a material with a very similar composition and properties to MTA, but supported by less clinical research.

*Objectives:*

- To evaluate if Portland cement produces a type of pathology that is clinically and radiologically detectable when applied in pulpotomy treatment for lower primary molars.
- To analyze radiologically the formation of reparative dentine by the remaining pulp, which manifests as stenosis of the root canal.
- To compare these results with those found in a similar investigation carried out previously by the same research team where MTA was applied.

*Material and method:* A total of 11 left and right lower primary molars were studied. The total monitoring time in this study was 12 months. Reviews were studied that contained clinical and radiographic evaluations six months after treatment. Bitewing radiographies were used that had been obtained during routine programmed pediatric dentistry monitoring, but no further specific radiographies for this study were made.

*Results:* No pathological findings were found in any molar treated with Portland cement during the clinical and radiographical evaluation, nor at 6 or 12 months. When Portland cement and MTA were compared as pulp agents for primary molars, no statistically significant differences were obtained with regard to resorption parameters. However, with regard to the formation of reparative dentine, there was a statistically significant difference in favor of Portland cement.

*Conclusions:* Despite the good results observed in MTA, it has certain disadvantages such as color changes and high cost, unlike Portland cement. According to our results, which revealed good biological reaction to Portland cement, this material could be an alternative to MTA for pulpotomy treatment, but more clinical studies are necessary to confirm these results.



## 18. AMOUNT OF FLUORIDE TOOTHPASTE USED BY CHILDREN WHEN BRUSHING

Cardoso Silva C., Silva D., Carvalho Silva C.,  
Silveira A., Teles A.

Universidade Fernando Pessoa. Lisboa

**Objective:** Brushing teeth with fluoride toothpaste plays an essential role in prevention. However, using excessive fluoride can lead to dental fluorosis. In this investigation the authors aim to evaluate the quantity of fluoride toothpaste used by children during daily brushing and to compare this with the recommended amount.

**Methods:** 51 participants between the ages of 2 and 17 years. A questionnaire on oral hygiene habits was applied, and a demonstration on the application of toothpaste as normally carried out was requested in order to evaluate the amount normally used on the brush.

**Results:** Out of the 51 interviewed, all (100%) brushed their teeth and 62.75% brushed twice a day. Normally, (90.2%) it was the child performing the brushing who was responsible for putting the toothpaste on the brush (86.28%). After brushing, 90.2% rinsed with water and 35.9% used a mouthwash. With regard to the amount of paste used, 62.5% used an excessive amount compared to what would be correct, and this difference was statistically significant.

**Conclusions:** Ingesting fluoride during brushing increases the risk of fluorosis. Based on the large percentage of children who were observed using an excessive amount of fluoride toothpaste, the essential role of pediatric dentists, general dentists and pediatricians is evident. They are able to motivate parents and children to, not only complete the brushing habit, but also to use the recommended quantity of toothpaste so that the beneficial potential is obtained but not the toxic risk.

## 19. INFLUENCE OF FLUORIDE VARNISH ON ADHESION TO DEMINERALIZED ENAMEL

Fernández Soria M., Muñoz Gómez I.J.,  
Rodríguez Abuín I., Pérez Silva A., Serna Muñoz C.

Universidad de Murcia. Murcia

**Introduction:** Tooth decay continues being a big public health problem in developed countries that leads to a continuous loss of phosphate and calcium ions from the tooth structure in a process known as demineralization. For some decades products have been developed and used for reducing enamel demineralization and for encouraging remineralization. We can divide these into those that contain fluoride, those that contain calcium and phosphate, and those that contain fluoride and calcium. In children with moderate, high or extreme caries risk, the preventative protocols include the use of fluoride varnishes that are aimed at preventing demineralization or at the remineralization of existing lesions.

The possibility of carrying out composite restorations on enamel treated with fluoride varnishes, makes further studies

necessary in order to discover the behavior of bonding materials on modified substrates

**Objective:** The aim of our research was to study adhesion on demineralized enamel treated with fluoride varnish.

**Material and methods:** 50 bovine teeth were randomly divided into 5 groups. A group with intact enamel, a group with enamel treated with fluoride varnish for a week (Bifluorid 12™), a group with demineralized enamel, group with demineralized enamel treated with varnish for a week, group of demineralized enamel treated with varnish for a week and roughened. We used the Futurabond® M+ adhesive and 37% orthophosphoric acid etching and GrandioSO universal micro hybrid composite.

**Results:** Adhesion strength on demineralized enamel was less than on normal enamel (40.088.57 Mpa vs. 52.31 10.10 Mpa;  $p < 0.001$ ). A week after applying fluoride varnish on enamel with normal mineralization, the adhesion strength was identical to that of enamel without a fluoride varnish. (49.05 9.70 Mpa, 52.31 10.10 Mpa; n/s). In the remineralized groups the sheer strength resistance values were similar to those in the demineralized enamel group (38.41 10.91 Mpa; 38.54 8.59 Mpa; 40.08, 38.41 10.91 Mpa; n/s) and significantly lower in enamel with normal mineralization, with or without varnish, (49.05 9.70 Mpa; 52.31 10.10 Mpa). The cohesive fracture mode of the enamel was greater in the demineralized groups.

**Conclusions:** A week after the application of fluoride varnish, the bonding strength of Futurabond® M+ adhesive to the enamel had not been modified.

## 20. RELATIONSHIP BETWEEN CARIES INDEX, LEVEL OF LACTIC ACID IN SALIVA AND QUANTITY OF SUGAR IN DIET OF A GROUP OF SCHOOL CHILDREN AGED 3 TO 5 YEARS

Morcillo López L., Ceñal Viñas A., Ortiz Ruiz A.J.,  
Pérez Silva A.

Hospital General Universitario Morales Meseguer. Murcia

**Introduction:** According to the WHO, caries is the most prevalent disease in developed countries. It affects between 60% and 90% of the school population. It is multifactorial, chronic and dynamic and displays signs of demineralization of hard tooth tissue. It is affected by four main factors that are the host, substrate, bacterial flora and time.

The bacteria present in the mouth use any fermentable carbohydrate for obtaining energy and for producing the acids that are responsible for the demineralization of teeth, and therefore, the development of carious lesions.

**Objective:** To evaluate the relationship that exists between caries index, level of lactic acid present in saliva and sugar content in the diet of preschool children in a school in the region of Murcia.

**Material and methods:** 90 children were included in the study who were aged 3, 4 and 5 years. Their teeth were

cleaned individually for a total of two minutes with a disposable brush that included toothpaste. After brushing, a visual oral examination was carried out with disposable mirrors in order to determine the presence of caries. The Clinpro Cario L-Pop test was then carried out that analyzed the lactic acid of all the children. Two weeks before the examination the parents were given a page to register the child's weekly diet that was then used to obtain the daily measure of sugar consumption of each child.

*Results:* In our study the children aged 5 years had a significantly higher caries index than those aged 3 years ( $1.31 \pm 1.88$  vs.  $0.15 \pm 0.49$ ;  $p = 0.019$ ). The children aged 5 years consumed more sugar than those aged 3 years ( $108.41 \pm 26.18$  vs.  $85.01 \pm 26.55$  vs.;  $p = 0.004$ ). The children aged 3 years had a greater value in the Clinpro Cario L-Pop test than those aged 4 ( $8.00 \pm 1.41$  vs.  $5.28 \pm 2.08$ ;  $p = 0.0001$ ) and those aged 5 years ( $8.00 \pm 1.41$  vs.  $6.23 \pm 2.52$ ;  $p = 0.012$ ).

*Conclusions:* As the age of the children increases there is a greater tendency to suffer tooth decay. Preventative measures should be implemented with greater emphasis at younger ages.

## 21. EVALUATION OF BONDING STRENGTH FOLLOWING THE USE OF FLUORIDE VARNISH

**Germán Cecilia C., Pérez Pardo A.,  
Hernández Fernández A., Martínez Hernández E.,  
Ortiz Ruiz A.J.**

*Universidad de Murcia. Murcia*

*Introduction:* As pediatric dentists we tend to carry out more preventative than restorative treatments. The prevention methods for carious lesions include restoration of teeth following remineralization. Fluoride plays an essential role in this field. Moreover, today, adhesive systems have much stronger bonding strengths than the clinically acceptable minimum. Therefore, studies are necessary that link the mineralization process with adhesion in order to assess how the former influences the latter.

*Objective:* To evaluate bond strength of a demineralized surface following the application of a fluoride varnish (Biofluorid 12®).

*Material and method:* 50 bovine teeth were extracted and divided into 5 groups of 10 teeth: control group with intact enamel, demineralized enamel group, demineralized enamel group with fluoride varnish, demineralized enamel group with fluoride varnish and roughened surface. All the groups had two layers of composite added measuring 2 mm each, in polyethylene tubes measuring 4 x 4 mm and with a 3 mm internal diameter. After 24 hours a resistance test was carried out on shear bond strength with a AGS 1- KND testing machine. The existence of significant differences was determined by simple Anova and for comparisons between groups a Tukey test was used. Differences were considered statistically significant when  $p < 0.05$ .

*Results:* All the groups showed a significantly lower value to the control group.

*Conclusions:* Treatment with Biofluorid varnish 12, 24 hours before the adhesion reduces shear strength significantly. However, the strength continues to be clinically acceptable.

## 22. INFLUENCE OF MICROABRASION WITH 45S5 BIOACTIVE PARTICLES ON BONDING STRENGTH OF A RESIN-MODIFIED GLASS IONOMER CEMENT

**Esparza B., Ribelles M., Carmona M., Garcovich D.,  
Sauro S.**

*Universidad CEU Cardenal Herrera. Valencia*

*Introduction:* Stabilizing carious lesions and creating an optimal environment for the remineralization process is one of the principal objectives of minimally invasive dentistry. One of the materials that can react with body fluids and encourage remineralization is bioactive particles 45S5 (BAG). The use of this material together with microabrasion systems has considerable advantages, notably the absence of pain during the procedure and the opportunity of preparing very conservative cavities.

*Objectives:* To evaluate the bonding strength of a resin-modified glass ionomer cement (RMGIC) on dentine penetrated with BAG after 6 months storage in phosphate buffered saline (PBS).

*Material and methods:* An in vitro study was carried out following the protocol approved by the Institutional Review Board of King's College (London) on caries-free human teeth extracted for periodontal or orthodontic reasons. Four study groups were established: 1) Teeth submitted to abrasion with 180-grit SiC grinding papers for 1 minute and irrigated, then washed for 20 seconds and dried for 2 seconds and submitted to photopolymerization with RMGIC. 2) Teeth submitted to abrasion with 180-grit SiC grinding papers for 1 minute and irrigated, acid etched with 10% polyacrylic acid (PAA) for 2 seconds, washed for 20 seconds, dried and submitted to photopolymerization with RMGIC. 3) Teeth with microabrasion using BAG and irrigated for 1 minute, washed with water for 20 seconds, dried and submitted to obturation with RMGIC. 4) Teeth with microabrasion using BAG and irrigated for 1 minute, washed with water for 20 seconds, dried, etched with 10% PAA for 20 seconds, washed with water for 20 seconds, dried and filled with RMGIC. All the sample was prepared and tested for micro-traction and confocal microscopy.

*Results:* All the different pre-treatments carried out on the dentine, etching and microabrasion with bioactive particles, influenced bonding strength, and the morphology of the RMGIC and dentine interface following storage in PBS for 24 hours and 6 months.

*Conclusions:* Microabrasion using a combination of BAG and liquid PAA, instead of BAG with H<sub>2</sub>O, increas-

es BAG filtration of the dentinal tubules and dentine surface, improving the durability and adhesion of PAA-etched RMGIC. Microabrasion with pre-treatment of the dentine surface using BAG can encourage remineralization and improve the curing of restorations with RMGIC.

### 23. DENTAL ABNORMALITIES IN NUMBER, SHAPE AND SIZE IN CHILDREN AGED 6,8,10 AND 12 YEARS ATTENDING A PRIMARY HEALTH CARE CENTER IN THE REGION OF MURCIA FOR CHECK-UPS

**Martínez Hernández E., Oñate Sánchez R.E., Cabrerizo Merino M.C., Germán Cecilia M.C., Ortiz Ruiz A.J.**

*Universidad de Murcia. Murcia*

*Introduction:* Children aged 6 to 12 years have a high incidence of tooth abnormalities regarding number, shape and size. These disturbances are responsible for malocclusions and for other oral problems in children with these abnormalities. An early diagnosis of these abnormalities is the best way of preventing any consequences.

*Objective:* To discover the prevalence of tooth abnormalities in number, shape and size among a population of children aged 6 to 12 years who attended for check-ups as part of a preventative program.

*Material and method:* A longitudinal type epidemiological study was carried out on a population of 3,000 school children who were aged between 6 and 12 years. For the sample only 209 children were selected who attended for the 4 check-ups during the 4 school years (6, 8, 10 and 12 years) at the Orodonal Health Unit of the El Palmar Primary Health Care Center in Murcia. The examination was carried out by the same dentists, using dental equipment, suitable lighting, flat mirrors and examination probes. The data collected were noted by the same dental hygienist at the center in personal health records following the WHO criteria. Out of the population of 209 children, a total of 220 variables were collected, stored in a Microsoft Office Excel 2010 spreadsheet, and processed with SPSS version 21.0 statistical software.

*Results:* At the age of 6 years, the most common abnormality was agenesis (with a mean of 0.07) followed by supernumerary teeth (0.01). At the age of 8 years only agenesis was detected as an abnormality (0.06). At the age of 10 years, after agenesis (0.08) both conoid teeth were observed (0.01) and microdontia (0.01) (0.01). At the age of 12 years, after agenesis (0.07) conoid teeth were observed (0.01), molarization (0.01) and microdontia (0.01).

*Conclusion:* At these 4 ages, of the abnormalities of number, shape and/or size, the higher mean was agenesis, which reached the highest value at the age of 10 years. Agenesis

can lead to malocclusion at a later date, and early detection is important.

### 24. REASON FOR CONSULTATION AND PREVALENCE OF SEVERE EARLY CHILDHOOD CARIES IN A POPULATION OF 0 TO 3 YEARS IN THE FUNDACIÓ HOSPITAL DE NENS AT BARCELONA

**Modena Nadal L.<sup>1</sup>, Mayné R.<sup>2</sup>, Maura I.<sup>2</sup>, Boj J.R.<sup>1</sup>, Espasa E.<sup>1</sup>**

*<sup>1</sup>Universidad de Barcelona. Barcelona. <sup>2</sup>Hospital de Nens. Barcelona*

*Introduction:* Severe early childhood caries is the manifestation of tooth decay at the age of 3 years. The presence of caries in children leads to a series of medical, emotional and financial repercussions.

*Objectives:* To classify the reason for the first visit, to estimate prevalence of dental caries and to identify factors such as hygiene, diet and family experiences associated to severe early childhood caries.

*Materials and methods:* This was a descriptive cross-sectional study carried out at the Fundació Hospital de Nens in Barcelona between February 2015 and February 2016, by the department of Baby Dentistry. A sample was obtained of 323 children aged 0-28 months and, following informed consent, the same examiner, a pediatric dentistry expert, carried out a clinical dental examination of each child. Using a questionnaire, data was gathered on variables of interest (the referral, age, sex, reason for the consultation, diseases of the patients, current medication, breastfeeding, bottle-feeding, nightly feeds, brushing frequency, type of paste, hygiene of the mother, hygiene of the father, consumption of sugar more than 3 times a day, no dental experience, caries).

*Results:* The estimated caries prevalence among the study population was 32.8% (CI of 95% = [27.6%; 38.1%]). Among the patients with caries, the reason for the visit was not caries in 18.9% of cases. In 14.1% of cases the reason for the visit was prevention. The probabilities of caries was significantly lower in patients referred by the FHNB (OR = 0.349,  $p < 0.001$ ). The most revealing factors associated with severe early childhood caries were: the absence of brushing, family hygiene habits, consumption of sugar 3.36 (O,  $p < 0.001$ ) breastfeeding associated with nightly feeds and bad hygiene may cause dental disease (OR = 3.01,  $p < 0.001$ ).

*Conclusions:* Studying the reason behind the first dental visit can help us to prevent oral disease and/or answer any queries parents may have. Parental influence on diet and hygiene, and a lack of oral hygiene, makes the early onset of caries more probable.

## 25. COMPARATIVE STUDY ON CARIES RISK FACTORS IN EARLY CHILDHOOD CARIES AMONG A POPULATION REQUIRING CARIES TREATMENT AND A SCHOOL AGE POPULATION

Díaz Poujol M.S.<sup>1</sup>, Cahuana A.<sup>2</sup>, Azofeifa A.L.<sup>3</sup>, Ballbé Mallol L.<sup>4</sup>

<sup>1</sup>Universitat de Barcelona. Barcelona. <sup>2</sup>Fundació Hospital Sant Joan de Déu. Esplugues de Llobregat, Barcelona.

<sup>3</sup>Hospital Clínica Bíblica. San José, Costa Rica. <sup>4</sup>EAP Gavarra y Jaume Soler. Cornellà de Llobregat, Barcelona

*Introduction:* Early childhood caries (ECC) is a public health problem given its high incidence. The increase in this entity suggests that in addition to “bottle caries” there are other risk factors that encourage ECC. It is for this reason that we carried out a comparative study among children under the age of 5 years in order to determine the risk factors:

*Objectives:*

- To determine sociodemographic status, “df” index and the different risk factors among two populations, one with children with caries and one with healthy school children.
- To compare the risk factors studied.

*Material and method:* A cross-sectional, observational, descriptive and comparative study was carried out among a sample of 100 patients with caries, referred to the Hospital San Joan De Déu (population A), as opposed to a sample of 199 children under the age of 5 years, in public schools in the region of Cornellà de Llobregat (population B). Both populations underwent: an oral examination, registration of index, caries pattern and a survey of parents regarding socio-demographic data, nutritional and oral hygiene habits.

*Results:* In population A, 63% of parents were “foreign” and 62.5% were working. The average age of the child was 36 months, df index: 8.24. Breastfeeding on demand (BF) was 54.7%; high consumption of fermentable carbohydrates 70%; fizzy drinks 93.1%. Brushing started between 18-24 months in 29.0%. In population B, 20% of parents were “foreign”, and 87.1% were working. The mean age of the children was 51%, df index was 1.22. Demand breastfeeding was registered at 45.3%. Consumption of fermentable carbohydrates was 58.6%; consumption of fizzy drinks was 6.9% in schools, brushing started between 18-24 months in 26.3%. On comparing both groups, we found in population A, a greater percentage of foreign parents, less active employment, higher caries index, greater percentage of demand breastfeeding, start of brushing was similar, and there was a greater preference for fermentable carbohydrates and fizzy drinks.

*Conclusions:* Among the factors related to caries, socio-demographic status should be taken into account, together with nutritional pattern. Being familiar with these factors

and with the influence of information, could lead to a reduction of ECC.

## 26. THE ANTIPLAQUE AND ANTIMICROBIAL ACTIVITY OF CHEWING GUM. URBAN MYTH?

Del Llano Fernández A., Rubido Montero S., García-Caballero Pérez L., Abeleira Pazos M.T., Limeres Posse J.

Universidad de Santiago de Compostela. A Coruña

*Introduction:* Oral hygiene care and maintenance has been a routine activity in humans since practically the dawn of civilization, and we have an arsenal of techniques and utensils to remove plaque, although in many cases this efficiency has not been proved. The possibility that chewing gum could enhance and/or act in a synergic manner with physiological mechanisms in order to achieve the complete removal of dental biofilm has been studied, but the results available in the literature are controversial.

*Objective:* The purpose of the present study was to evaluate the effect of masticating xylitol-sweetened chewing gum on the mechanical removal and growth of dental plaque.

*Material and methods:* The group studied was made up of 20 healthy adult volunteers with good oral health. Each volunteer underwent four experiments in which they had to carry out a different technique for plaque removal: manual tooth brushing, mastication with a placebo chewing gum, mastication with xylitol gum and simultaneous mastication with 3 xylitol chewing gums. In each of these groups plaque control was carried out of participants at 3 points: on arrival at the clinic in basal conditions, immediately after carrying out the removal technique and 24 hours after finishing the removal. In each of the experiments non-stimulated saliva samples were taken, at these 3 points, in order to determine the vitality of the bacteria in the saliva.

*Results:* Anti-plaque efficiency of a xylitol-sweetened chewing gum was similar to that of the placebo chewing gum, and lower than conventional brushing. No differences were observed in macroscopic regrowth of plaque after 24 hours between the placebo gum and xylitol. Moreover, the antibacterial efficiency of a chewing gum with xylitol, evaluated in terms of bacterial vitality in saliva samples, was significantly higher to that of the placebo gum and to conventional brushing, but its effect was neutralized in less than 24 hours.

*Conclusions:* The clinical anti-plaque efficiency of chewing gum is lower than that of conventional brushing. The addition of xylitol provides certain antibacterial efficiency, although the effect is neutralized in less 24 hours.

## MISCELANEOUS AND SURVEYS

### 27. AWARENESS AND MANAGEMENT OF TRAUMATIC DENTAL INJURIES AMONG PRE-SCHOOL AND PRIMARY TEACHERS: PILOT STUDY

**Mondelo Rubio R., Bernabè Llopis A.,  
Gonzàles Galvàn F., Ribelles Llop M.**

*Universidad CEU Cardenal Herrera. Valencia*

*Introduction:* Currently traumatic tooth injuries represent the second reason for pediatric dentistry care after dental caries. Most traumatic tooth injuries occur within the home, and at school in second place. The success of treatment after suffering dental trauma depends on the early and correct management of the situation, and it depends on the people present at the accident site. There are authors that claim that parents and teachers, who witness most of these situations, lack the information and knowledge to manage these types of situations correctly.

*Objective:* The main purpose of the present study was to evaluate knowledge of pre-school and primary school teachers on the management of dental trauma.

*Material and methods:* A cross-sectional non-experimental descriptive study was carried out in public, private and grant-supported schools in the metropolitan area of Valencia. The study was based on carrying out a sample that was made up of two parts, a first section that included basic demographic information and a second section with ten questions on the management of dental trauma directed at pre-school and primary teachers. The data collected was analyzed statistically using R-commander software and the Chi-squared test of independence and Pearson's correlation coefficient.

*Results:* The sample was made up of 208 surveys. 75% of those interviewed would call the guardian or would search for professional help immediately, and more than half the teachers (56.73%) would also do this despite the child not being in pain. In cases of avulsion, 93.27% of those in the survey would not put the primary tooth back in place, while only 10.58% would put an avulsed permanent tooth back in place.

In order to conserve an avulsed tooth until arrival at the dental clinic, most of those who answered correctly (37.57%) replied in milk (25.96%), in physiological saline solution (8.65%), or in the child's mouth (0.96%). Finally, 46.63% would download an application to help them manage a dental trauma.

*Conclusion:* There is a lot of disinformation with regard to the management of traumatically injured teeth among teachers, which leads to these situations being badly handled when they arise during school hours, and this can negatively influence prognosis. Training teachers so that they act correctly when these circumstances arise is a primordial task for pediatric dentists, but it will lead to an improvement in prognosis.

### 28. STUDY ON THE LEVEL OF KNOWLEDGE ON DENTAL EROSION IN A SAMPLE OF ADOLESCENTS

**Vilanova Tur J.J., Tovar Flores W.V.,  
Marqués Martínez L., Ribelles Llop M.**

*Universidad CEU Cardenal Herrera. Valencia*

*Introduction:* Dental erosion is defined as the pathological, chronic, localized and painless loss of dental tissue as a result of the chemical action of acids, but without the action of microorganisms. The acid that produces the erosion can come from extrinsic sources such as food and drink, or intrinsic sources from gastric acid that reaches the oral cavity through vomiting or reflux.

*Objective:* The main purpose of the present study was to determine the knowledge on dental erosion among a sample of students in IES Gilabert de Centelles de Nules (Castellón).

*Material and methods:* The initial population was made up of 352 adolescent students aged between 12 and 17 years, who were chosen by means of a non-probability consecutive sampling system. They all participated in a survey that was made up of 3 parts: information on the student, information on their knowledge of dental erosion, information on their knowledge of food, drink and habits leading to erosion. Once the survey had been carried out, the data was analyzed using the R-Commander statistical program. The Chi-squared test was used to compare the response pattern with regard to age, and the Kruskal-Wallis non-parametric test was used to compare the values of the correct answers in the different age groups.

*Results:* The final sample was made up of a total of 348 correctly completed surveys. It was observed that only 17.82% of the students knew what dental erosion was, although 26.44% had heard of it. Some 62.53% believed that erosion was the same as caries, while 85.92% was not aware of the factors associated with dental erosion. In children aged 16 to 17 years there was greater awareness on the habits, food and drink leading to erosion. There was greater knowledge on the association of oranges, lemons and kiwis on producing dental erosion. Although awareness on drinks was low, most answered correctly that fizzy drinks caused erosion.

*Conclusion:* Knowledge on dental erosion among the sample of students participating was low. More than 50% confused caries with dental erosion. Having a wider knowledge of the different risk factors is necessary for proper prevention and, if necessary, therapeutic treatment.

### 29. FACIAL ANALYSIS OF PATIENTS WITH 22q11 DELETION SYNDROME

**De la Hoz Calvo A.<sup>1</sup>, Beltri Orta P.<sup>1</sup>,  
Gómez García E.<sup>2</sup>, Losa Muñoz P.M.<sup>2</sup>,  
Chung Leng Muñoz I.<sup>1</sup>**

*<sup>1</sup>Universidad Europea de Madrid. Madrid. <sup>2</sup>Hospital Universitario La Paz. Madrid*

*Introduction:* 22q11 deletion syndrome is one of the more common micro deletion syndromes in humans. Its clinical features are wide, which makes establishing a tentative diagnosis very complicated before the generic study that will provide the final diagnosis. The literature describes various facial features related to deletion which in certain cases has led to the suspicion of the syndrome in some patients.

*Objectives:* To determine if the facial characteristics described in the literature were present in a group of child patients with 22q11 deletion syndrome. To analyze if there are any features that arise frequently in these patients, which have not appeared in the literature up until now, that could help us detect the syndrome.

*Material and methods:* Extraoral face-on and profile photographs were taken of 18 patients. The photographs were analyzed in order to determine if there were, or were not, certain facial characteristics. After this and by using the profile photographs, measurements were taken of the seven different facial angles. Each angle was measured three times, and the mean value of the different measurements was taken, to determine the standard deviation of these.

*Results:* After the analysis of the face-on and profile extraoral photographs, a high prevalence of certain facial characteristics was observed such as attached lobules (78%) bulbous nasal tip (89%), narrow nasal base (94%), narrow nasal passage (89%), abundant hair (84%), mongoloid slant of eyes (78%) and straight (94%) and sparse eyebrows (84%). However, certain characteristics found regularly by other authors were very rare in this study, and some were not encountered at all such as: microstomia (10%), separated domal segment (0%) or fine skin (0%). Of the facial angles studied, the lower nasofrontal angle of Legan's face showed an increase of 66% and 82% respectively. 61% showed a lower facial convexity compared with values established as normal.

*Conclusions:* Characteristics of the ears, nose and hair described in the literature arose in the usual manner in these patients. Mongoloid slant of the eyes, straight and sparse brows, nasofrontal and lower angle increase in Legan's face and reduced facial convexity, could be added as indicators of suspicion for 22q11 deletion when associated with other clinical features.

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### **30. IS IMPLEMENTING CONTINUOUS TRAINING INTERVENTION PROTOCOLS ON TRAUMATIC DENTAL INJURIES NECESSARY FOR PRIMARY CARE HEALTH WORKERS?**

**Valdepeñas Morales J., Martínez Pérez E., Adanero Velasco A., Planells del Pozo P.**

*School of Dentistry. Universidad Complutense de Madrid. Madrid*

*Introduction:* Traumatic dental injuries are a public health problem.

*Objectives:* To evaluate knowledge among health professionals at primary health care centers regarding dental traumatology in relation to the management of these lesions in the consultation room.

*Material and methods:* 31 professional primary health care workers in the Community of Madrid participated in the pilot study (doctors, dentists, nurses and dental hygienists). All those in the survey filled in a questionnaire which included questions on the management, at the site of the accident, of traumatic dental injuries and other related issues. In addition, dentists answered another test with questions on the management of these lesions in the consulting room. Immediately afterwards a talk was given on the subject.

*Results:* Except for dentists, the rest of the groups had limited ideas with regard to the immediate management of traumatic dental injuries. Based on the treatment of the dental injury received in the consulting room, dentists had insufficient knowledge. The large majority of the sample was of the opinion that information campaigns aimed at primary care health professionals were needed, and only 6.45% of health care workers did not feel that this training was necessary.

*Conclusions:* This pilot study highlights the need for continuous training of the different primary care health professionals in order to improve current knowledge on the management of traumatic dental injuries and to minimize the sequelae that may arise.

### **31. QUALITY OF INFORMATION AVAILABLE ON THE INTERNET ON DENTISTRY AND DOWN SYNDROME**

**Rey Otero G., Diniz Freitas M., Álvarez Brasa C., García García M.T., Limeres Posse J.**

*Unidad de Pacientes con Necesidades Especiales. School of Medicine and Dentistry. Universidad de Santiago de Compostela. A Coruña*

*Introduction:* There are many sources of health information for the general public but the greatest social change has been through the internet. Its popularity has allowed unprecedented access to health information, although the source of the information is mostly unregulated. Therefore, in recent years various organizations have developed tools to evaluate the quality of health web pages. In developed countries there has been an increase in pregnancies in which Down Syndrome (DS) has been diagnosed and, because of this, daily information searches are made by relatives and educators.

*Objective:* The purpose of the present study was to identify the information related to Dentistry and DS and to analyze the quality for non-health care users.

*Material and methods:* Google and Yahoo were used as search engines with the terms "Dentistry-Down syndrome", "Dentist-Down syndrome" and "Dental treatment-down syndrome". The usual exclusion criteria were applied for this type of study (pages with promotional purposes, blogs, etc.)

and the content of the result was analyzed with the HON, DISCERN and LIDA evaluation tools.

**Results:** Yahoo offered many more results than Google with the search terms. Of the 600 pages obtained, only 11 met the inclusion criteria, and most belonged to non-profit organizations or to medical centers. Only 4 (36.3%) were completely related to the subject of the search and none had the HON seal. On carrying out the DISCERN analysis, a general average score of  $2.7 \pm 0.6$ , was obtained and the best evaluation was for section 1 (reliability). On applying the LIDA tool, a global qualification score of the webs was obtained of  $62.6 \pm 7.4$ . The "accessibility" was for the LIDA section with the highest mean score of ( $78.5 \pm 9.4$ ).

**Conclusion:** There is a lack of quality health information on the Internet with regard to DS and Dentistry. This aspect is especially worrying given the ease of access to this information. Professionals should be aware of the knowledge that the population may have, which may not be completely correct. The population should be warned of this fact and encouraged to use tools that can determine what information is reliable and which is not.

### 32. HARASSMENT IN THE CONTEXT OF PEDIATRIC DENTISTRY

**Gonçalves Silva C.S., Silva Teixeira D.I., Santos Gonçalves A., Pinto R.M., Vilela Lobo A.P.**  
*IUCS-Norte. Portugal*

**Introduction:** Bullying or harassing is an aggression that has reached significant proportions within schools. Children and adolescents are the most common victims of this type of violence. Dental aggression is related to the abuse of children and adolescents who have dental and facial disturbances.

**Objectives:** To publicize the circumstances in which dental abuse arises and the impact on the lives of children and adolescents. To publicize the assessments made by children on seeing images of dental disturbances.

**Materials and methods:** A cross-sectional study was carried out to collect data using a questionnaire in Baltar, Paredes in Portugal. The sample size was 277 school children who were aged between 7 and 14 years, of both sexes. Two questionnaires were carried out, one for students in the 3<sup>rd</sup> and 4<sup>th</sup> years and another for 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> years.

**Results:** With regard to the 3<sup>rd</sup> and 4<sup>th</sup> year questionnaire, 86 children identified as "bad": halitosis, amelogenesis imperfecta and tooth decay (89%, 94% and 95%, respectively). With regard to the other anomalies (fluorosis, dental fractures, malocclusion and loss of teeth) the assessment was unanimous.

The questionnaire of 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> years was aimed more at the existence of dental harassment or bullying. 79% of the children and adolescents liked to show their teeth when smiling. However, 55% of those questioned did not believe that their teeth were attractive to others. With regard to the statement "They laughed at me because of my teeth", 6% report-

ed that they had suffered bullying. This was more common among girls. To the question on whether they knew of any cases of harassment among friends, 27% answered "yes". 2% of children answered "yes" regarding if they had been "followed and hit". 51% of children claimed that there were things about their teeth that they would like to change. The girls had a higher percent, and were more concerned about their teeth.

**Conclusions:** We can conclude that the abnormality that most worried children was amelogenesis imperfecta, caries and halitosis. Fluorosis was the least worrying. On carrying out this study it was concluded that dental harassment had a low prevalence. The ages in which harassment was more prevalent were: 11, 12 and 14 years. The girls suffered this most.

### 33. KNOWLEDGE OF PREGNANT WOMEN AND MOTHERS ON ORAL HYGIENE IN BABIES. WHAT CAN THE PEDIATRIC DENTIST DO?

**González Aroca I.M.<sup>1</sup>, Ribas Pérez D.<sup>1</sup>, Sarango Calero L.J.<sup>1</sup>, Iglesias Linares A.<sup>2</sup>, Mendoza Mendoza A.<sup>1</sup>**

*<sup>1</sup>Universidad de Sevilla. Sevilla. <sup>2</sup>Universidad Complutense de Madrid. Madrid*

**Introduction:** Currently there is a significant relationship between the lack knowledge on oral health of a baby by pregnant women and mothers, and the appearance of various problems in the mouth of the baby, including early childhood caries. In addition to the pain and the infection, these caries have a negative effect on the behavior of children, their general development and quality of life. And the risk of future caries is predicted. Mothers play a decisive role at this point, as babies depend on them for their correct oral health.

**Objectives:** The purpose of the present study was to evaluate maternal knowledge on oral hygiene in a baby, through the study of oral health habits of mothers and pregnant women, their beliefs, psychological factors and type of diet. An up-to-date vision is offered on the various strategies that a pediatric dentist can use in his consulting room in order to improve this knowledge, and to stimulate the establishment of correct oral hygiene guidelines in babies.

**Materials and methods:** An update of the literature was carried out using the PubMed data and the MeSH terms: "oral health", "parents", "education", "maternal oral health", "knowledge", "mothers"; which were interrelated with Boolean operators "AND" and "OR". In addition, structured talks aimed at mothers and pregnant women were given, with pre- and post-education knowledge assessment on oral hygiene guidelines, diet, psychological factors and beliefs. The impact that the information could have on improving this knowledge was also studied.

**Results:** There is a considerable lack of knowledge regarding oral hygiene in babies. This result confirms the need for

training everyone responsible for the care of a baby. After the talks, an improvement was observed regarding knowledge on oral health during pregnancy, oral health in babies, diet and hygiene guidelines.

*Conclusions:*

1. There is a considerable lack of knowledge on oral hygiene in babies, in mothers as well as in pregnant women.
2. Talks, advice and videos are a great source of information and they help to establish correct oral hygiene in babies, while reducing the risk of early childhood caries appearing.
3. Establishing a prevention protocol is necessary in order to encourage a greater conscience and the reduction in the incidence of early childhood caries.

### 34. ORODENTAL DISTURBANCES IN A SAMPLE OF CHILD PATIENTS WITH DOWN SYNDROME

Romo Olvera C.V.<sup>1</sup>, Cahuana Cárdenas A.<sup>1</sup>,  
 Barcelò Oliver M.A.<sup>2</sup>, Brunet Llobet L.<sup>1</sup>

<sup>1</sup>Hospital Sant Joan de Déu. Barcelona. <sup>2</sup>Dental Palmaplanas. Palma de Mallorca

*Introduction:* Down syndrome (DS) or trisomy 21 is a chromosomal disorder with a recognizable phenotype, of variable expression that is characterized by a certain degree of intellectual disability. The global incidence is approximately 1 in every 600-1,000 births, but the risk is variable depending on the age of the mother. They have dental anomalies in number, shape and often eruption delays. From the point of view of oral pathology, we may find a lower incidence of dental caries and a greater incidence of periodontal disease.

*Objective:* To determine the orodental disturbances of a pediatric sample with DS.

*Material and method:* A descriptive study was carried out using a sample of 138 child patients with DS within a follow-up program of the hospital Sant Joan de Déu in Barcelona since 2006. Parameters were registered regarding caries, periodontal disease, soft tissue disturbances, habits, malocclusion and dental treatment received.

*Results:* The sample registered had a mean age of 13 years (range 1-20), there was a slight predominance in the female sex (52.1%), and antecedents of heart disease of 40%.

Some 58.6% of the patients had mixed dentition and 29.7% permanent. Agenesis was most common of the upper lateral incisor in 40%, and morphological disturbances (conoid teeth) in 54.3%. Some 30.1% had ectopic teeth and transpositions in 8.9%. The dmf index was 1.6% and the DMF index was 0.87%. Gingivitis with different degrees of severity was 63.9%, and incipient periodontitis was 5.7%. Some 74.1% of the sample had fissured tongue and/or macroglossia, 25.3% had dry mouth and 49.2% obvious signs of bruxism. The most common malocclusion was Angle class III in 65.9%, and only 19.1% had normal occlusion. A total

of 21.7% received treatment under general anesthesia during childhood.

*Conclusions:* We found a very high incidence of agenesis, ectopia and transpositions. Caries index was low unlike the high incidence of gingivitis. Specific regulations should be introduced on oral hygiene in order to prevent gingivitis and periodontal disease.

### 35. RESULTS OF PEDIATRIC DENTISTRY EXERCISE AMONG A SOCIALLY DISFAVORED POPULATION AFTER A DECADE OF EXPERIENCE

Gorritxo Gil B., Rámila Sánchez E., Franco Varas V.  
 Universidad del País Vasco UPV/EHU. Vizcaya

*Introduction:* For more than a decade we have been carrying out extramural university activities such as routine and normal Pediatric Dentistry practice, according to the agreement between the Department of Health of Bilbao's Town Hall and the Universidad del País Vasco UPV/EHU in order to operate within children's schools that have a socioeconomically disfavored population.

*Objectives:* To assess the oral health of a population not included in the Children's Dental Care Program (PADI) of the Basque government, for the early detection of disease in children and adolescents belonging to groups at risk who were especially vulnerable, and to carry out a follow-up. Our aim was to introduce the figure of the dentist, to encourage cooperation and the acquisition of healthy habits regarding hygiene and food, as well as the use of oral health care systems.

*Material and methods:* The UPV/EHU programmed the interventions with the school's medical department and those responsible in the education centers that also gave the families information and obtained the informed consent.

The parents or guardians were given appointments and the medical history of each child was taken.

A different activity to promote oral health was carried out according to the age of each group. For adolescents there were presentations on food, healthy habits, oral hygiene etc. followed by talks or round tables with debates. For the infant population there were stories, games, songs or theatre adapted to the age in order to attract their attention and obtain their cooperation. These activities were prepared by the students of Pediatric Dentistry.

Each child/adolescent underwent an extra and intraoral examination that assessed soft and hard tissues, type of dentition, eruption phase, presence of caries, habits, gingival status, oral hygiene, assessment of function and occlusion. An individual report was then handed out that indicated, if required, the need for treatment, if urgent or not, and guidance on the use of the Dental Services of the Program and at the University's dental clinic.

*Results:* All the individuals involved gave a very high assessment of the exercise being carried out to encourage



within the school curriculum greater responsibility, and to provide information on procedures, healthy hygiene habits, food and self-care in health.

*Conclusions:* We should persevere with this exercise in order to increase demand for care when oral disease is detected.

### **36. BEHAVIOR MANAGEMENT IN CHILDREN WITH AUTISM SPECTRUM DISORDER USING NEW TECHNOLOGIES**

**Hernández Fernández A., Martínez Hernández E.,  
Fernández Miñano E., Martínez Beneyto Y.,  
Ortiz Ruiz A.J.**

*Universidad de Murcia. Murcia*

*Introduction:* One of the most important aspects in pediatric dentistry is to control a child's behavior. There are many techniques that are aimed at obtaining the cooperation of child patients. Among these are distraction, play therapy, behavior modification, desensitization and positive reinforcement. New technologies are influencing a large number of aspects in the lives of children. In the area of pediatric dentistry these are being used principally for behavior management.

The children diagnosed with autistic spectrum disorder are a major challenge for dentists due to their extensive commu-

nication problems which makes it is practically impossible to get them to cooperate. Much of the treatment is carried out under sedation or general anesthesia.

*Objectives:* The aim of the present work is to show (a video with) the behavior management of an autistic child in the dental office by using new technologies.

*Case report:* A child aged 14 years presented who had been diagnosed at the age of 3 years with a generalized developmental disorder (autism spectrum disorder). All dental treatment had been carried out under general anesthesia. The patient currently is in the permanent dentition and is caries free, but has mild generalized gingivitis due to the accumulation of bacterial plaque and tartar.

The patient was treated in the dental chair using a mobile device (smartphone) for behavior management, which was used to distract him and for play therapy. The patient went to the consulting room over several days for desensitization. In addition his behavior was reinforced positively.

*Comments and conclusions:* The management of patients with autism spectrum disorder is complicated. Most are treated under general anesthesia or deep sedation. However, when the treatment to be carried out is simple or relatively short, other techniques can be used to avoid a greater risk for the child.

These new technologies, so acceptable among child patients, can be a very useful tool for the behavior management of patients with autism spectrum disorder.