

European Association of Dental Public Health Meeting 2011

The following 20 abstracts are a selection from the 140 presented during the European Association for Dental Public Health meeting in Rome, Italy, from 21-23 September 2011

PARENTS' DENTAL FEAR RELATES TO THEIR ASSUMPTION OF THEIR CHILDREN'S DENTAL FEAR

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Previous studies suggest that parents cannot be used as reliable proxies for assessing children's dental fear. **Aim:** The aim was to study if parents' dental fear relates to their assumption of their children's dental fear. **Methods:** All 11–12-year-old children in city of Pori (n=1691) and in city of Rauma (n=807) and one of their parents were invited to participate this survey in autumn 2001. The cities have similar economic profiles and this study is secondary analyses of the baseline data from a programme of oral health promotion and a randomised clinical trial for controlling caries. Questionnaires were returned from 1649 (98%) children and 1523 (90%) parents in Pori and 734 (91%) children and 693 (86%) parents in Rauma, containing 1862 eligible mother-child pairs and 262 father-child pairs, total of 2124 pairs. The children and parents were asked if they had dental fear and the parents were also asked if the child in question was afraid of dentistry. Children and parents answered their questionnaires independent of each other. Fear was assessed with single 5-class question. Dental fear variables were dichotomised to fearful (quite or very afraid) and non-fearful (not afraid, slightly afraid or afraid to some degree). The association between parents' dental fear and their assumption of their children's dental fear was evaluated using logistic regression analysis when considering children's self-reported dental fear and the genders of the participants as confounders. The Ethics Committee of the Northern Ostrobothnia Hospital District and the City of Pori gave their approval for the study. **Results:** Parents' dental fear related to their assumption of the dental fear of their children (crude OR 2.7, 95% CI=1.9-3.8, p<0.001).

When considering children's self-reported dental fear and the genders of the participants as confounders the association remained similar (OR=2.6, 95% CI=1.7-4.2, p<0.001). **Conclusion:** Parents' own dental fear seems to influence their assumption of their children's dental fear. Therefore this study supports previous suggestions that dental fear of the children should be studied only by eliciting information from the children themselves at least from the age of 11-12.

SOCIAL IMPACT OF ORAL DISORDERS IN SUBSTANCE ABUSE

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Aim: To evaluate the social impact of oral disorders in patients addicted to alcohol or other substances. **Methods:** As a first phase in a longitudinal study, 400 waiting list patients of the Jellinek/Arkin Centre for Special Care Dentistry in Amsterdam were asked for their consent to complete a mailed questionnaire that included the short form of the Oral Health Impact Profile (OHIP-14). Data were collected as a routine part of Jellinek medical procedures that have been subjected to ethical review. Mean scores were calculated for the seven subscales of the OHIP-14 as well as a summary score. The summary score ranges from 0 (no impact) to 56 (extreme impact); subscale scores range from 0-8. Repeated measurements analysis of variance (ANOVA) was performed in order to compare subscale means. **Results:** 110 questionnaires were eligible for analysis (response rate 27%); 92 (84%) of respondents were male; mean age was 48 (8); these results did not differ significantly from those in the non-respondents. Mean (standard deviation) OHIP-14 summary score was 26 (13). Mean subscale scores were: functional limitation 4.7 (2.3), physical discomfort 6.6 (2.0), psychological discomfort

6.9 (2.5), physical disability 5.5 (2.3), psychological disability 6.4 (2.2), social disability 5.3 (2.3) and handicap 5.4 (2.1). ANOVA showed more negative impact was reported in the subscales of physical pain, psychological discomfort and psychological disability than in other subscales ($p < 0.001$). **Conclusions:** Negative social impact of oral disorders among substance abuse patients was relatively high, compared to other populations. For instance, it was worse than reported by patients in their first week after third molar extraction, as well as patients with severe periodontitis. In view of the low response rate, if the non-responders had more problems, these findings may underestimate the negative social impacts experienced. Further study is required in order to determine the effect of dental treatment on social impact of dental disorders in patients with special needs due to substance abuse.

IMPROVING ORAL HEALTH IN YOUNG CHILDREN: A SCHOOL FLUORIDE VARNISH PROGRAMME

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Previous surveys have shown that young children in Tower Hamlets, London, have high levels of dental disease with 25% of 3 year olds and 39% of 5 year old experiencing dental decay. The interim findings of a 3-year fluoride varnish programme are presented. **Aim:** To deliver a preventive programme of twice-yearly application of fluoride varnish to nursery school children aged 3-5 years using general dental practitioners. **Methods:** All state run nursery schools were invited to take part in the programme. Schools were divided into clusters and local dentists were invited to bid for a number of clusters. Letters were sent to all parents inviting them to take part in the programme and to sign the consent forms. Parent information sessions were provided in the schools to which parents were invited. Dental teams went to the schools where they screened children for obvious caries and applied the fluoride varnish. Children in need of treatment were referred to appropriate services. **Results:** Six local dental practices teams took part in the programme and 57 (95%) nursery schools participated. Each nursery had a parent awareness sessions with 940 parents attending. A total of 4238 (54.8%) of children were screened for caries and 2415 (31.2%) had fluoride varnish applied. A total of 1765 (22.8%) needed treatment. There was

marked variation in uptake for both screening and fluoride varnish application by school and dental team. **Conclusion:** A dental preventive programme was delivered in schools by general dental practitioners. Variation in uptake was thought to be due to a number of factors including a complex consent process, lack of clarity of information for parents, alcohol in the varnish, lack of school champions and complexities of general dental practitioners working in schools. Work is underway to address these in the second year of the programme.

DOES CHILDREN'S ORAL HEALTH PROMOTION PROGRAMME INFLUENCE MOTHERS' BEHAVIOUR?

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Aim: The aim was to determine if a multi-level oral health promotion programme (OHP) implemented in 2001–2005 among school children (11-12-year-olds at baseline) in Pori, Finland, improved the behaviour of mothers oral health-related behaviour compared to the mothers of a neighbouring control town, Rauma. Some of the OHP was targeted to parents and others involved in their children's everyday life. **Methods:** The Ethics Committee of the Northern Ostrobothnia Hospital District and the City of Pori gave their approval for the study. Cross-sectional data sets were gathered with questionnaires before and after the OHP in both towns. Mean daily frequencies of consumption of sugary drinks (soft drinks, sports drinks, juices, chocolate, sugared tea/coffee), sugary snacks (sweets, candy bars, chocolate, ice cream, cookies, bakery), and xylitol products (chewing gum, lozenges) were asked, as well as tooth-brushing with fluoride toothpaste and using dental floss. For sugary drinks and snacks and xylitol products, sum variables were calculated. Changes in mean frequencies were evaluated. **Results:** In 2001, 1527 (90%) parents in Pori and 693 (86%) in Rauma returned the questionnaire. In 2005 the numbers were 1292 (78%) and 523 (63%), respectively. Of the responding parents, 83–87% were mothers, and were included in this study. In 2001 Pori ($n=1332$) and Rauma ($n=581$), and in 2005 Pori ($n=1083$) and Rauma ($n=434$). At baseline, mothers in Rauma consumed more sugary snacks and xylitol products than those in Pori. The trend was, that compared to the control (Rauma), mothers in Pori were more successful in

changing their behaviours (sugary drinks -24% vs. -19%, sugary snacks 0% vs. +6%, xylitol products +17% vs. +7%, use of dental floss +35% vs. +25%, and tooth-brushing +2% in both towns). The changes were statistically significant for drinking sugary drinks in both towns and for using xylitol products and dental floss in Pori. **Conclusion:** The OHP programme designed for children in Pori was also successful in changing mothers' oral health-related behaviours.

EDUCATION AS A PREDICTOR OF CHRONIC PERIODONTITIS: A SYSTEMATIC REVIEW WITH META-ANALYSIS

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Aims: The impact of socioeconomic inequalities on health is well-documented. Despite the links of periodontal disease with cardiovascular diseases, adverse pregnancy outcomes and diabetes, no meta-analysis of socioeconomic variations in periodontal disease exists. **Methods:** We conducted a systematic review with meta-analysis to synthesis the studies examining low educational attainment as a risk factor for clinician-confirmed periodontitis in adults aged 35+ years in the general population. The authors searched studies published until November 2010 using EMBASE and MEDLINE databases. References listed were then scrutinised, our own files were checked, and, finally, we contacted experts in the field. The authors included only general population-based studies. All articles were blind reviewed by two investigators. In the case of disagreement, a third investigator arbitrated. Independent extraction by two reviewers using PRISMA guidelines; the quality of included articles was assessed. **Results:** Most studies in our meta-analysis gave crude values for the association between chronic periodontitis and level of education. Only 6/18 studies gave adjusted effect measures including two studies with adjustment for smoking. Relative to the higher education group, people with low education attainment experience a greater risk of periodontitis (OR: 1.86 [1.66-2.10]; $p < 0.00001$). The association was partially attenuated after adjustment for covariates (OR: 1.55 [1.30-1.86]; $p < 0.00001$). Sensitivity analyses showed that

methods used to assess periodontitis, definition of cases, study country and categorisation of education are largely responsible for the heterogeneity between studies. No significant publication bias was shown using both the Egger ($p = 0.16$) and rank correlation tests ($p = 0.35$). **Conclusions:** In the studies reviewed, low educational attainment was associated with an increased risk of periodontitis. Although this evidence should be cautiously interpreted due to methodological problems in selected studies, efforts to eliminate educational inequalities in periodontitis should focus on early life interventions.

ORAL HEALTH PROMOTION FOR UNDERPRIVILEGED CHILDREN LIVING IN TIMIS COUNTY

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Aim: The aim of this study was to assess the effectiveness of an oral health promotion programme for children living in an underprivileged area, based primarily on improving tooth-brushing skills and changing dietary habits. **Methods:** All the 270 children aged 6 – 10 years, attending schools in three villages in Timis county Romania: $n_1 = 102$ children, $n_2 = 98$, $n_3 = 70$ took part in this study, starting 2009. Ethical approval was obtained from the Ethics Committee of the University of Medicine and Pharmacy "Victor Babes" Timisoara, Romania and that of the regional authorities was given. Consent was given by the parents of each child who participated in the study. At base-line, the two calibrated examiners interviewed each child with regard to: food brought to school every day, number of times a day that teeth were usually brushed and who had taught the child to brush teeth. Afterwards children received oral health lessons from students of the Faculty of Dentistry, Timisoara containing general information about teeth, tooth brushing techniques, diet, disease prevention and importance of regular visits to the dentist. Lessons were interactive and presented as Power Point presentations. One year later each child was interviewed again by the same examiners. **Results:** Of the original study population of 270, 30 children (11%) dropped out due to absence from school at one of the two examinations. Before the programme, 46.8% of all the children reported consuming many sweets in their diet. This level decreased to 30% ($p = 0.003$) after the pro-

gramme. Before the programme, 67% of the children reported brushing once a day and 33% twice a day. This improved after the programme to 13% once a day and 87% twice a day ($p < 0.0001$). No children reported brushing more than twice a day. Ten had reported never brushing, before the programme, but all brushed at least once a day afterwards. **Conclusions:** The results of the study indicated that the oral health promotion through interactive educational lessons improved oral health behaviour of the children.

CARIES PREVALENCE AND ORAL HYGIENE STATUS AMONG MENTALLY RETARDED CHILDREN FROM TIMISOARA

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Aim: The aim of this study was to investigate caries prevalence and the oral hygiene status of children with mental disabilities. **Methods:** 104 institutionalised children aged between 4-18 years, with mild mental retardation (IQ 50-70), randomly selected from a special school in Timis county Romania, were investigated. Ethical approval was gained from the relevant regional authorities and informed consent was given by their care-takers. Calibration of the examiners took place at the Dental School of the University of Timisoara. The kappa coefficient for their inter-examiner agreement was over 0.75 denoting excellent agreement. Caries examination was carried out in accordance with WHO 1997 criteria and oral hygiene status was evaluated by visually assessing the presence of plaque on teeth (Sillness-Löe 1964 Plaque Index). Children were divided into three groups according to age: n1= 30 children aged between 4-6 years (mean age 5.05 ± 0.57), n2= 50 children aged between 7-11 years (mean age 8.67 ± 1.22), n3= 24 children aged between 12-18 years (mean age 14.17 ± 1.93). **Results:** During the development of the study there were four dropouts because of lack of co-operation. The mean dmft for group n1 was 7.00 ± 2.50 . For group n2 mean dmft was 7.64 ± 3.13 and mean DMFT was 3.2 ± 1.95 , and DMFT for n3 was 8.66 ± 2.57 . The Sillness-Löe Plaque Index had values between 1.8-2.23 for all the children, revealing poor oral hygiene status. **Conclusions:** These results indicate that there is a clear need for a pre-

ventive approach and proper dental education for children with mental disabilities and those who look after them, including close monitoring and periodic dental check-ups.

COMPARATIVE MONITORING OF URINARY FLUORIDE EXCRETION IN PRESCHOOL CHILDREN

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Aim: The aim of this study was to evaluate whether current urinary fluoride (F) excretion of preschool children, under their customary conditions of fluoride intake, is different compared to the data obtained eight years earlier (in 2002). Over the last decades there has been no community-based fluoridation programme for caries prevention in Romania. **Methods:** The study conducted in 2010 comprised 33 randomly selected subjects, from among 75 healthy kindergarten children, aged 5-7 years. The subjects were permanent residents of Targu-Mures, Romania, where the drinking water fluoride concentration is low (< 0.2 ppm F). The parents gave written informed consent and the study was approved by the Research Ethics Committee of the University of Medicine and Pharmacy Targu-Mures. The study followed the supervised 16-hour time-controlled urine sampling method recommended by the WHO to estimate the 24-hour fluoride urinary excretion. The fluoride was analysed with an ion-specific F electrode, using the direct method. Mann-Whitney U test was used for statistical evaluation and the significance level was set at 0.05. **Results:** The mean value (S.D.) of estimated daily urinary fluoride excretion was $0.332 (0.220)$ mg F/24h, which is a consistent value with the upper limit for a low F-intake community, presented in the WHO guidelines (Marthaler, 1999) for this age group. Compared to the data obtained in our earlier study $0.341 (0.193)$ mg F/24h ($n=35$), respectively, when the same method for F analysis was used, no significant differences were observed ($p=0.65$). **Conclusions:** The current results of daily urinary F excretion indicate that fluoride intake of the investigated children was below the optimal recommended level, and similar to the data observed in year 2002. The findings suggest a community fluoridation preventive programme in Targu-Mures, Romania could be introduced.

PERIODONTAL STATUS OF ORPHANS AND FAMILY ADOLESCENTS IN NORTHWEST RUSSIA

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Orphans have poorer general health and more limited access to professional health care than children living with parents in Russia. Orphans in northwest Russia have never previously received a periodontal examination using international assessment criteria. **Aim:** To assess and compare the periodontal status of orphans with adolescents living in families in northwest Russia. **Methods:** In 2009-2010, 75 orphans (boys-54%) aged 15-17 years living at three randomly selected Special Orphanages and 58 adolescents, living in families (boys-50%), aged 15 years attending randomly selected schools in Severodvinsk received a dental examination in school dental offices. The subjects' periodontal status was assessed using the CPITN Index according to the WHO (1997) criteria by a single calibrated dentist. Six index teeth (16, 11, 26, 36, 31, 46) were examined. Pearson's chi-square tests and Mann-Whitney tests were used for dichotomous and numerical data, respectively. The study was approved by the Ethical Committee of the Northern State Medical University, Arkhangelsk, Russia. Informed consent was obtained from all parents or tutors. **Results:** The mean age of the orphans was 15.8 years (SD=0.7). Altogether, 78.7% (95% CI:68-86) of the orphans and 82.8 % (95%CI:71-90) of the adolescents living in families had CPITN score of one or more ($\div 2=0.348$, $p=0.555$). The corresponding mean number of diseased sextants were 1.98 ± 0.2 and 2.58 ± 0.2 ($p=0.041$) respectively. The mean number of sextants with bleeding (0.90 ± 0.1 vs. 1.44 ± 0.2 , $p=0.066$) and calculus (1.09 ± 0.1 vs. 1.14 ± 0.2 , $p=0.748$) were no different in orphans and family adolescents respectively. No gender differences were observed. **Conclusions:** Although the small sample size cannot provide a very precise estimate, the findings should raise serious concerns. Mean number of sextants with a CPITN score of 1 or more among orphans in Severodvinsk is lower than among family adolescents. It may be attributed to the regular day regimen in orphanages (including oral hygiene) compared to adolescents in families. The results suggest a high need for preventive and curative periodontal services among adolescents in Severodvinsk, northwest Russia.

INFLUENCE OF ORAL HEALTH PREVENTIVE PROGRAMME ON SALIVA ENZYMATIC ACTIVITY IN PATIENTS WITH XEROSTOMIA

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Aim: To measure the influence of a preventive programme including "BioXtra" dry mouth care system on saliva enzymatic activity in patients with xerostomia. The hyposalivation of salivary glands is a problem of dentistry. Changes of saliva biochemical parameters in patients with xerostomia result in local oral immunity disturbances and development of oral diseases. **Methods:** This study was approved by Ethics Committee of Moscow State University of Medicine and Dentistry. All of the participants signed informed consent. We randomly selected 51 patients aged 25-65 years with diabetes mellitus and corresponding xerostomia (study group) and 26 healthy volunteers of the same age without symptoms of dry mouth (control) participated in the study carried out in 2010. The preventive programme for the test group included oral health education, individual and professional oral hygiene, oral cavity sanitation, use of "BioXtra" dry mouth care system (moisturising toothpaste, gel, spray and mouthwash). Unstimulated whole saliva was taken before breakfast in the beginning of the trial and after 6 months. Alkaline phosphatase and peroxidase activity was determined using Autoanalyzer "Humalyzer 2000". Statistical analysis was performed using Student's t-test. **Results:** Initial mean saliva secretion rate in patients of study group (1.9 ± 0.3 ml/min) were significantly ($p < 0.001$) lower than in the control (4.3 ± 0.4). Mean values of alkaline phosphatase and peroxidase activities were 30.5 ± 1.9 u/l and 12.2 ± 1.1 iM/min/l respectively in the test group, 7.2 ± 0.3 u/l ($p < 0.001$) and 26.4 ± 4.2 iM/min/l ($p < 0.001$) in the control. At the end of the study mean saliva secretion rate in patients with xerostomia significantly increased to 2.8 ± 0.2 , ($p < 0.05$) alkaline phosphatase activity diminished to 15.4 ± 0.9 u/l ($p < 0.001$), while peroxidase activity increased to 15.5 ± 1.8 iM/min/l ($p > 0.05$). In the control group there was no significant difference between baseline and final data. **Conclusion:** A preventive programme including "BioXtra" dry mouth care system usage promotes improvement of saliva biochemical parameters in diabetic patients with xerostomia.

ORAL HYGIENE PRACTICES AND DIET REPORTED BY HEAD-TEACHERS IN CZECH KINDERGARTENS: A PILOT STUDY

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Background: Oral hygiene and healthy eating habits are established in childhood. They critically influence the incidence of dental caries. Nationwide data on oral hygiene practices and diet among Czech children attending kindergartens have so far not been available. **Aims:** The aim of this study was to evaluate reported oral hygiene and dietary practices in Czech public kindergartens attended by an overwhelming majority of 3-6 year-old children. **Methods:** During the winter of 2010/2011, this cross-sectional descriptive study, approved by the Ethical Committee of the 1st Faculty of Medicine, used a validated 7-item e-mail questionnaire for head-teachers. The questions addressed oral hygiene practices during classes, oral hygiene education and training, and the intake of sweetened foods and drinks during school days. A random sample of 1,276 kindergartens (approximately one quarter of all Czech pre-school establishments) with about 40 thousand pre-schoolers was chosen. **Results:** The questionnaire response rate was 76.0% (970 kindergartens). 1. Children were reported as brushing their teeth regularly once a day after lunch in 50.5% (490) of kindergartens. 2. Oral hygiene training under medical (dental practitioner's, dental hygienist's) or teacher's supervision was provided at least once over the past two years in 16.8% (163) and 26.3% (255) of kindergartens, respectively. 3. Rare (up to once a week) or no sweets snacking (for example candies, chocolate, cookies) during the classes was reported by 96.8% (939) kindergartens. Tooth-friendly beverages such as water, milk or sugar-free tea are served in only 11.6% (113) of kindergartens. **Conclusion:** The reported data show infrequent and irregular oral hygiene training and intake of tooth-friendly beverages, but low sweets snacking in the majority of Czech kindergartens. Improvement of oral hygiene practices and implementation of tooth-friendly diet in all kindergartens is desirable in order to decrease the incidence of dental caries in the primary dentition.

EARLY CHILDHOOD CARIES IN 2-3 YEAR-OLDS IN NORTHWEST RUSSIA

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Aim: The aim of this study was to investigate the regional distribution of early childhood caries (ECC) among 2-3 year-olds in Arkhangelsk region, northwest Russia. **Methods:** In 2010, a cross-sectional survey was conducted in two randomly selected kindergartens in Mirny town and in two kindergartens in Severodvinsk town. The total number of children was 96 (50% boys) with mean age of 2.6 (SD 0.5) years. ECC defined as any sign of dental caries on any tooth surface during the first 3 years of life; Severe-ECC (S-ECC) was classified as dmfs >4. The caries experience of primary teeth was assessed by a calibrated dentist (PM) using the WHO (1997) criteria at the d1 level with d(1)mft/d(1)mfs values (presented as mean \pm standard error); Care index (ft/d(1)mft/100) and Significant Caries index (SiC) were calculated. Mann-Whitney tests were used for numerical data. The study was approved by the Ethical Committee of the Northern State Medical University, Arkhangelsk, Russia. **Results:** Altogether, 39 (40.6%) (95% CI:31.35-50.63) of children had ECC. The corresponding mean d(1)mft value was 2.19 ± 0.36 and d(1)mfs value was 3.93 ± 0.74 , where d-component (2.10 ± 0.35) and ds-component (3.53 ± 0.68) were predominant. The prevalence of S-ECC was 23 (24%) (95% CI:16.53-33.39) with mean d(1)mft in the sample was 7.78 ± 0.59 and d(1)mfs was 14.87 ± 1.65 . The SiC was 6.28 ± 0.60 . No urban and gender differences were observed. Overall, the Care Index was 2.75% in the study population. Deciduous upper central incisors (24% of the overall sample respectively) and first primary molars (19.8%) were found more affected in the maxilla than in the mandible ($p=0.012$ and $p<0.001$ respectively). **Conclusion:** The study results showed high caries experience in the selected sample. A low Care Index indicates low proportion of treated caries, demonstrating the need in improvement of dental care and particularly caries preventive strategy for preschool children in Mirny town and Severodvinsk town.

EPIDEMIOLOGICAL SURVEY OF DENTAL AND PERIODONTAL HEALTH IN CAMPANIAN 12-YEAR-OLDS

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Aim: The aim of this study was to determine the oral health of Campanian 12-year-olds and to establish an oral health baseline prior to introducing promotion, prevention and appropriate dental care for specific groups, and to provide the starting point for monitoring the World Health Organisation 2020 global goals for oral health. **Methods:** Ethics approval was granted by the “Federico II” University. Parents of the children gave written informed consent. This cross-sectional observational study was performed from October 2009 to July 2010 on 441 schoolchildren (253 females and 188 males) randomly selected from Campanian public schools (Italy). Clinical examinations were by three calibrated professionals, in the selected schools, with artificial light using a plane buccal mirror, a WHO CPITN ball probet and dry field. They recorded DMFT, SIC, CPI and DDE indices following WHO (1997) recommendations. A questionnaire investigating demographic and oral health behaviour data was completed by parents. Data were analysed with SPSS software. SIC was determined through an online developed Microsoft Excel® application (<http://www.whocollab.od.mah.se/expl/siccalculation.xls>). **Results:** In 12 year old children caries prevalence was 35.8%. Mean DMFT was 1.17 ± 1.96 while SIC was 3.42 ± 1.97 . Analysis showed that 44.2% had a healthy periodontal status, 36.1% had plaque and calculus and 19.7% showed bleeding on probing. Dental enamel defects were recorded in 16.3% of subjects. **Conclusions:** Information drawn from this study can be helpful to design future and specific programmes to reduce caries incidence and to promote better oral health level in the Campania region of Italy.

DENTAL HEALTH STATUS IN 3-5 YEAR-OLD PRE-SCHOOL CHILDREN UNDERGOING LIVER TRANSPLANTATION

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Aim: Liver transplantation is the treatment of

choice for end-stage liver disease in both adult and paediatric patients. The aim of this study was to compare the dental health status of 3-5 year-old pre-school children undergoing liver transplantation with matched healthy subjects. **Methods:** With written informed parental consent 31 children (3-5 years), undergoing liver transplantation, selected from volunteer patients in the “Federico II” University Hospital, Department of Hepatology, Naples, Italy, was selected. Their data were compared to those of an age matched control healthy group of 58 children, randomly selected from 5 public schools of the Campanian Region. This study was carried out from June to December 2010 in the Paediatric Dentistry Department of the “Federico II” University, Naples (Italy). The ethics committee of the same University approved the study. Clinical examinations were carried out by three calibrated professionals, under identical conditions using a plain buccal mirror and a dental explorer, with air drying when necessary, in order to record caries prevalence, caries experience and dental enamel defects. bitewing radiographs were taken. A questionnaire investigating demographic and oral health behaviour data was completed by their parents. Data were analysed with SPSS software. **Results:** Caries prevalence was 64.5% in the liver transplant group and 20.6% in the control group. The dmft mean value was 2.52 ± 2.16 in the liver transplantation group and 0.59 ± 1.34 in the control. The difference in dmft mean between the two groups was statistically significant ($p < 0.0001$). In the liver transplantation subjects there was a significantly higher prevalence (61.3%) of dental enamel defects respect to healthy group (18.9%). **Conclusions:** The significantly higher prevalence of caries and enamel defects showed the need of promoting dental caries prevention programmes in these patients.

SPECIAL OLYMPICS SPECIAL SMILES: ORAL HEALTH CARE FOR PEOPLE WITH SPECIAL NEEDS

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Aim: This study aimed to assess the oral health status of athletes participating at the Special Smiles Programme of the Special Olympics (SO) during the cross-country skiing competition in Oberhof,

Germany. SO is the largest worldwide Olympic Organisation for mentally disabled people. The SO health care programmes focus on development of physical and emotional well being of the athletes. **Methods:** 169 SO athletes aged 8 to 59 years (mean age 25 years) were screened by 5 dentists under field conditions. Athletes' domestic oral hygiene habits, decayed, filled, missing teeth, oral pain and oral treatment urgency were recorded. Plaque was scored using Silness & L  e (1964) Index. Supervised tooth brushing training was provided by dental students from the University Hospital, Jena. The athletes, parents or authorised agents, signed written consent. Data collection was anonymous. Data were analysed using MS Excel and SPSS 15. **Results:** Caries prevalence experience was 80.6% and DMFT score was 5.9 ± 5.9 . 34.9% (n=59) of the athletes had untreated dental caries and 4.1% (n=7) suffered from oral pain. Urgent treatment need was recorded in 18.9% (n=32) of the athletes, maintenance treatment needs in 43.2% (n=73) and non-urgent treatment need in 32.0% (n=54). Plaque scores revealed 36.9% clean sites, 35% with slight, 22.2% with medium and 6.0% with heavy plaque distribution. 43.2% (n=73) of the athletes had gingivitis. 90.0% of them reported tooth brushing by themselves, 66.3% using hand toothbrush only, 21.3% using electrical toothbrush and 10.1% using both. **Conclusions:** Comparing the oral health status of people with special health care needs not involved in sport activities, SO athletes showed lower DMFT (5.9 vs. 12.2) and plaque index (1.0 vs. 2.1), without reaching the values of healthy adults of the same age. Involving dental students in the Special Smiles Programme may contribute to a willingness and ability to provide dental treatment to people with special health care needs.

XYLITOL/MALTITOL AND ERYTHRITOL/MALTITOL LOZENGES IN CARIES PREVENTION: A 4-YEAR DOUBLE-BLINDED CLUSTER RCT

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Aim: To investigate the additional effect of xylitol/maltitol and erythritol/maltitol lozenges delivered at school level on dental caries, in comparison with a control group (n=101) receiving comprehen-

sive routine caries prevention given in public dental health care. **Methods:** A 4-year, cluster randomised, double-blinded clinical trial in Kotka, a town in south-eastern Finland between years 1999 and 2003. 351 10-year-old informed and consenting subjects from 13 schools were randomly assigned as clusters to three groups by drawing lots (n(Xyl/mal)=110; n (Ery/mal)=123; n(Control)=118) The study was independently reviewed and approved by the Ethics board. Two groups used the lozenges on school days, in three teacher-supervised sessions daily, over two school years. The daily amount was 4.7g/4.6g for xylitol/maltitol (n=99) and 4.5g/4.2g for erythritol/maltitol (n=101), respectively. All groups received routine, free caries examinations, prevention and treatment in the public health care. 301 children were analysed intention-to-treat. The main outcome measure was 4-year dentin caries increment registered clinically. The groups were compared using hierarchical logistic regression to adjust for potential clustering in the data. About 20% absolute risk reduction was considered clinically significant.

Results: The mean DMFS values at baseline were 0.35 (xylitol), 0.31 (Ery/mal), 0.27 (control) and the 4-year dentine caries increment (ADMFS) values were 1.63, 1.33 and 1.52, respectively. Use of either lozenge did not result in a caries increment lower than in the control group. Instead, a strong relationship between baseline prevalence and the 4-year caries increment was observed. **Conclusion:** In relatively low-caries conditions the school-based use of xylitol/maltitol or erythritol/maltitol lozenges may not have additional caries-preventive effect when compared with routine prevention given in public dental health care. Even in relatively low-caries conditions the future caries increment is strongly related to earlier caries occurrence.

A PROSPECTIVE STUDY ON CARIES INCIDENCE IN A COHORT OF FLEMISH PRE-SCHOOL CHILDREN

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Aims: The objectives of this study were to determine the incidence of visible caries experience and to identify the risk factors for this incidence in a

cohort of preschool children living in Flanders. **Methods:** Data were collected from 1,057 children, recruited in two regions during a period of 6 months in order to obtain a cohort of at least 500 consecutively born children in each region. Validated questionnaires on oral health related behaviour were completed by parents at birth (2003-2004), at age three (2007) and five years (2009). Parental consent was obtained for the children to take part in the study. At age three and five the children were examined by trained dentists. Caries experience was scored according to the guidelines published by the British Association for the Study of Community Dentistry (BASCD). Logistic regression analyses were performed with as outcome variables: visible caries experience at age three and increment in visible caries experience between ages three and five. Ethical approval for the study was given by the Medical Ethics Committee of the Catholic University, Leuven. **Results:** At age three and five, enamel and/or dental caries experience was observed in 139 (22%) and 213 (41%) of the cohort respectively. Between the examinations performed at age three and five, new visible caries lesions developed in 203 (39%) of the cohort. The multivariable logistic regression analyses revealed that the presence of visible plaque accumulation on at least one primary tooth was a significant risk factor for visible caries experience at age three and for an increment in caries experience between age three and five. Children with previous caries experience at age three had significantly higher odds for new caries lesions at age five. **Conclusions:** Presence of visible plaque and previous caries experience are confirmed as significant risk factors for visible caries experience in preschool children. Interventions aimed at caries prevention should focus on very young children and on the control of plaque accumulation. The presence of visible plaque accumulation as a screening tool to identify young children at risk for future caries experience shows high potential.

NEEDS ASSESSMENT FOR CARE HOME RESIDENTS AND STAFF IN LANARKSHIRE, SCOTLAND

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Aims: To assess oral health needs for residents and training needs for staff in a care home setting. **Methods:** Of 94 care homes in Lanarkshire, seven

were randomly selected for baseline oral health screening. Dental officers from the Salaried Primary Care Dental Service carried out an assessment of the residents' oral health needs. Verbal consent was obtained from residents before screening took place. Questionnaires were given to care home staff to identify any gaps in oral health knowledge and attitudes. The needs assessment was carried out as service evaluation therefore no ethics approval was required. **Results:** Out of 400 residents screened, 84% (n=336) had full or partial dentures; 74% (n=296) had no natural teeth; and among those with natural teeth 73% (n=76) had decayed teeth. Among 49 care home staff who completed questionnaires, 71% (n=35) were not aware that poor oral health can affect general health; 57% (n=29) reported there were no screening tools available; and 89% (n=44) requested oral health training. Subsequently, an oral health assessment tool was developed through partnership working with NHS Lanarkshire nursing staff from the Older People's Directorate. A training programme called 'Mouth Matters' for care home staff was developed. The programme included: a one-hour theory-based presentation on oral health and the impact poor oral health may have on general health; 30-minute demonstration on skills to carry out mouth care; and 30-minute training on how to use the oral health assessment tool. **Conclusions:** The needs assessment showed that most residents have poor oral health conditions and there was no screening tool for them. A large percentage of care home staff lacked training on oral health. Subsequently, a staff training programme and an oral health assessment tool for residents were developed.

BETTER ORAL HEALTH AFTER VISITING A DENTAL HYGIENIST: RESULTS FROM A SWEDISH COHORT

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Aims: to investigate two groups of people aged 65 and 75 years old, who had visited a dental hygienist in the past year compared with groups who had not and the differences to oral hygiene routines, received information, life-style factors, self-perceived oral health, dental care visit habits, and perceptions from the last dental visit. **Methods:** In two

counties in Sweden, all persons born in 1932 and 1942 were surveyed by mail in 2007. The response rate was 72%. The population consisted of 9,813 persons. Non-response analysis showed that the sample was representative, no difference was found concerning gender or county of origin. Ethical approval was obtained. Bivariate analysis by contingency tables with chi-square analysis and multivariable analysis by multiple regression were performed. **Results:** A significantly higher proportion who had visited a dental hygienist had received information about oral hygiene, fluoride and tobacco consumption, $p < 0.05$. Their oral hygiene habits were better in aspects of frequency of tooth-brushing, use of fluoride toothpaste, flossing/toothpicks and extra fluoride, $p < 0.05$. There were some differences between the two age cohorts, those born in 1942 (65 years) received information about the use of tobacco more often, but they were also more frequent smokers. Self-perceived oral health was better for those visiting a dental hygienist, $p < 0.05$. A higher proportion who visited a dental hygienist felt pain and unpleasantness at their last visit, $p < 0.05$. **Conclusions:** Having visited a dental hygienist in the last year was related to having better oral hygiene routines, receiving more information about health factors, perceiving oral health better, having more frequent visiting habits but also to have perceived more pain and unpleasantness at the last dental visit. Dental hygienists seem to contribute to improving oral health.

EFFECTS OF A REIMBURSEMENT TARIFF REFORM ON ORAL HYGIENIST SERVICES

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Aim: The aim of this study was to evaluate how the reimbursement tariff reform in oral hygienist services affected basic periodontal treatment in terms of volume, fees charged, reimbursement costs, and patients' out-of-pocket costs. In Finland, the fees charged by oral hygienists in private practice have been partially reimbursable since the beginning of 2010 under the tax-funded National Health Insurance (NHI) scheme. The reimbursements are calculated according to a separate schedule of fixed tariffs, whereas previously oral hygienist services were for purposes of reimbursement considered to be part of the dentist's work and were reimbursed

according to the schedule for dentists' services. Reimbursements for basic periodontal treatments, and the fees charged, depend on the duration of such procedures as their content is the same. **Methods:** The analyses were based on the NHI's quarterly data about the basic periodontal treatment procedures reimbursed during 2008–2010. The effects of the reform were analysed using linear regression models with time (having values from 1 to 12) and a dummy variable (having value 0 before the reform and 1 after that) as explanatory variables. **Results:** The reform had no significant effect on the total number of treatment procedures, but the duration of treatments per patient increased by over 2 minutes ($p < 0.001$), because treatments with a short duration were replaced by longer treatments. No significant changes were observed in the average fees charged per patient, or in patients' out-of-pocket costs, whereas the small decrease in average reimbursements per patient was statistically significant. **Conclusions:** Patients received at least the same volume of basic periodontal treatment for equivalent out-of-pocket costs as before the reform. The reduction in total reimbursement costs achieved by the reform benefited NHI and, consequently, taxpayers.

ORAL HEALTH IN 3-6-YEAR-OLDS IN SOUTHWEST GERMANY

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Aims: To investigate the current oral health status of 3 to 6 year-old kindergarten children in southwest Germany. **Methods:** After obtaining the consent of the ethics committee of Heidelberg University, a cross sectional study was conducted in 30 randomly selected kindergartens in the German Rhein-Neckar region in 2010. Parents received a letter containing information about the survey and were asked to give their consent for the examination of their children. Caries diagnosis was based on visual examination. A plane mirror, a blunt dental probe and artificial light were used. The WHO 1997 methods and criteria were followed. The examinations were performed by two dentists with inter-rater agreement that was very high (Kappa = 0.86). **Results:** 72% of the parents returned their consent. In all, 1204 children aged 3

to 6 years were included in this study, 603 boys and 601 girls. The average age was 4.4 (SD=1.02) years. 77.2% were caries-free. The dmft ranged between 0 and 15 with a mean dmft of 0.36, 0.77, 1.02 and 1.24 for the 3-, 4-, 5- and 6-year-olds respectively. The dmfs ranged between 0 and 70 with a mean dmfs of 0.67, 1.63, 2.18 and 2.54 respectively. Boys had a significantly higher dmft mean (0.95) than girls (0.72) ($p<0.05$). 17.4% of the children had untreated caries defects. Concerning the restoration material, 7.3% of the children had composite fillings, 0.3% amalgam fillings and 1% stainless steel crowns. **Conclusions:** These findings showed that 22.8% of the kindergarten children in SW Germany still had caries experience. Although this proportion is not as high as expected, caries preventive programmes should be improved in the kindergartens southwest Germany.

DETERMINANTS FOR ORAL-HEALTH-RELATED-QUALITY OF LIFE AMONG ADULTS

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Aim: The aim of the study was to identify and analyse determinants of oral-health-related quality of life (OHRQoL) among adults admitted to a Danish research programme on general health and lifestyle (DANHES 2007-2008). **Methods:** The main study included 18,065 individuals. The Danish National Committee on Biomedical Research Ethics approved the study and written consent was used. The study population was a convenience sample of persons 18-96 years of age ($n=4,402$, mean age 54), who volunteered to participate. Participation was open to those who booked an appointment within a capacity limit of 4500 persons. Data were collected in 12 (of 44) municipalities during 2007-2008, based on geographical criteria and engagement with local authorities. Clinical oral examinations and a pretested structured questionnaire were used. The questions comprised social factors, lifestyle, general health, dental visit habits and OHRQoL, measured by a modified index (Slade and Spencer 1994) based on 10 questions regarding perceived dysfunction, discomfort

and disability due to oral disorders. Non-parametric methods and multivariate logistic regression were used. **Results:** Mean DMFS was 62, 0.7% of the study population were edentulous, 7% wore dentures, 88% were regular users of the dental care system, and 76% reported no OHRQoL problems, while 6% reported OHRQoL-scores of 3 or more (maximum score = 30). When adjusting for sex, age, social-cultural factors, general health and lifestyle, odds ratio for OHRQoL (score \geq 3) was 4.3 for edentulousness, 3.6 for 1-9 natural teeth left, 5.6 for no dental visits within the past 5 years, 3.3 for wearing dentures, and 2.5 for DMFS \geq 100 (all results: $p<0.001$). **Conclusions:** Considering a skewed socio-demographic distribution and more favourable oral health of the study population compared to the Danish population in corresponding age groups, the most important determinants for high level of OHRQoL are regular dental visits followed by number of natural teeth. Wearing dentures and high caries experience contribute to considerable reductions of OHRQoL.

YOUNG SWEDISH ADULTS' VIEWS ON MEASURES OF ORAL HEALTH RELATED TO QUALITY OF LIFE

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Aim: The aim of the study was to describe Swedish young adults' views on three measures of OHRQOL. Background Many measures have been developed to estimate the impact of oral health on quality of life (OHRQoL). However no measure has been especially developed for young adults. This study describes how young adults consider the appropriateness of three available validated and translated measures of OHRQOL. **Methods:** The study had a qualitative approach. Sixteen informants (eight woman and eight men) aged 21-29 years were interviewed during 2010-2011 about their views on the Oral Health Impact Profile (OHIP), the Oral Health-Related Quality of Life-UK (OHRQoL-UK) and the Oral Impacts on Daily Performances (OIDP). The sampling of informants was strategic with reference to age (21-25 yrs, 26-29 yrs), education (compulsory school vs. more).

Two of the measures were sent to the informants two weeks before the day for the interview, and they were asked to fill in and bring them to the interview. The third measure (OIDP) was presented and the informants answered it orally in connection with the interview. Data was collected by thematic, open-ended interviews. The data analysis was performed by manifest and latent content analysis. The study was approved by the Ethics Committee of Lund University, Lund, Sweden (Dnr 209/124). **Results:** The informants considered the measures to contain relevant and important aspects concerning the oral health related quality of life in young adults. The questionnaires were not too time-consuming to fill in. Furthermore, the young adults were most concerned about their oral health and especially the aesthetics. **Conclusions:** The content in the analysed measures was deemed relevant to the informants but highlighting aspects important to the age group would be useful for research and in clinical practice.

COST/EFFECTIVENESS OF ICDAS-II TRAINING AND CALIBRATION SESSION IN ITALY

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Aim: This study aimed to investigate costs associated with one ICDAS-II training and calibration session performed in Italy. **Method:** The personnel

involved were: one trainer dentist, a specialist in dental public health and three dentists as trainees; one was a specialist in dental public and two specialists in paediatric dentistry. They were trained and calibrated using the International Caries Detection and Assessment System (ICDAS-II). Data gathering was in the paediatric department of the academic dental clinic of University of Rome in 2010. Ethical approval had been granted from the university to approach parents of children: individual parental consents were used. The 2.5 days training and calibration sessions involved 18 children whose mean age was 7 years (range 4-14) including full primary dentition and mixed dentitions. The inter examiner agreements were combined with key economic information on the costs of generating such sessions. Kappa statistic and cost estimations were calculated with SAS software system.

Results: The sessions required 18 hours: 11 hours of training with 8 patients and 7 hours of calibration with 12 patients. Trainee's salaries and dental exam materials for the sessions cost respectively 1260€ and 560€. Trainer travel and accommodation per day and statistical report total expenses reached 1800€. Average Kappa statistic of agreement on all ICDAS clinical caries codes (01 to 06) and on non-cavitated codes (01 and 02) were 70% (59-90) and 63% (49-78) respectively. This equated to an average cost per qualified trainee of 2306€.

Conclusion: Based on these results, adequate training and calibration sessions can be provided in European Universities at reasonable cost given the potential multiple ICDAS use in teaching, research, clinic and dental public health settings.