

# European Association of Dental Public Health 16<sup>th</sup> ANNUAL MEETING

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**Abstracts for presentations by invited conference speakers**

## Quality and dental public health research and scientific paper

### The road to developing evidence-based recommendations. A sealant story

MARGHERITA FONTANA



The objective of this presentation will be to review the importance of publishing and available evidence in drafting evidence-based recommendations for practice. As an example, the author will describe the process that was followed in the USA to update sealant recommendations both for practice (2008) and school-based programs (2009). Briefly, guidelines for sealant use in community programs in the USA had been last revised in 1994. Since then new information had become available on the effectiveness of sealants, the prevalence of caries and sealants in children and young adults, and techniques for caries assessment and sealant placement. In addition, some dental practitioners had been questioning the effectiveness of certain sealant program practices, such as sealing "incipient" caries or not taking radiographs prior to sealant placement. In 2004, the Centers for Disease Control and Prevention decided to assemble a workgroup of recognized experts in sealant research, practice, and policy, and caries assessment, prevention, and treatment. This group completed a focused review of the effectiveness of sealants on sound and carious surfaces, caries assessment prior to sealant application, indications for sealant placement on pit-and-fissure surfaces, and evaluation of sealed teeth for sealant retention and caries progression. In addition, the panel also considered the effectiveness of selected placement techniques, such as surface cleaning methods and use of assistance (i.e., four-handed technique), in increasing sealant retention. As part of this process the group had to conduct and publish several systematic reviews. This published work was ultimately used to draft updated evidence-based sealant recommendations, highlighting the importance of publishing and available evidence in helping set the path for change.

### Why most research is wrong, the hidden role of incentives and the search for statistical significance

JEFFREY HYMAN



This discussion will focus on conceptual mistakes in research that we often make in the areas of reporting positive results, significance testing, and causality, focusing on Hill's Criteria; and the problems that these mistakes cause. We will discuss the reasons we tend to over-interpret our results, what our motivations are for doing this, and the ways in which this can affect our work and the literature. P values and statistical significance can be very confusing. We will briefly review their history, look at misconceptions about what P values really mean, and discuss the problems of sample size and multiple comparisons. Then we will look at what statistical significance (or its absence) does and does not imply in terms of importance and clinical significance. For example, does statistical significance mean that results are true? Does the lack of significance mean that they are not true? Finally, we will look at the major problems which these types of errors cause in the scientific literature, including a number of examples and an article that concludes that most research findings are false. We will look at how non-significant findings can lead to significant results, why more prestigious journals are likely to report erroneous results, and why small studies and studies in hot areas are more likely to be wrong. Lastly, we will discuss how to recognize these errors in the literature and avoid them in our own work as researchers, reviewers, and editors.

### Inferring... What?

STEFANO PETTI



Inference comes from the Latin word "inferre" (bring in) and refers to the process of drawing conclusions relative to the study population starting from the data obtained from a sample. Inference is different from deduction, which means bringing out and refers to the process of extracting the meaningful results from the sample. The process of knowledge is basically split into deduction and inference. Deductions are extracted from a sample, but cannot be extended to the population as such, they must be adapted, because samples are not the study population, but mere fractions of it, subjected to sampling variation. Unfortunately, scientific literature in the field of public dental health is full of misinterpretations due to wrong inference. The sources of wrong inference are classifiable into wrong deductions, which lead to wrong inference and wrong inference starting from good deductions. Wrong deductions are, in turn, due to biased studies or incomplete deductions.

An example of wrong deduction due to biased study is a meta-analysis which sought to investigate whether diagnostic delay was associated with advanced-stage oral cancer (published by Eur J Oral Sci), where the authors deduced that delayed diagnosis increased the risk of advanced-stage oral cancer by 30%. However, such study did not apply the correct meta-analytic methods, and such inference was wrong. An example of incomplete deduction is a cross-sectional study in a sample of Spanish children (published by Caries Res), where the authors did not infer that high intake of sticky sugar-rich foods, namely, candies and jellies, was associated to a decreased caries risk.

An example of wrong inference starting from good deductions, typical of RCCT, is the large trial on the effect of visual screening on oral cancer mortality made in Kerala, India (published by Lancet), where the authors inferred that implementation of such screening worldwide could prevent at least 37000 deaths. However, using the 95% confidence intervals (i.e., the extension at population level of data from samples) in place of the point estimates, the number of potentially prevented deaths is 5800.

In conclusion, good inference requires that the study is well designed, results are completely reported and the necessary limitations are adopted before extending the results to the general population.

## Reporting and interpreting quality of life data

GEORGIOS TSAKOS



A considerable volume of the dental literature focuses on assessing the subjective dimensions of oral health, through the use of oral health related quality of life measures. The most common way of presenting data from quality of life studies is in terms of aggregate scores (e.g. means) along with testing the statistical significance of differences in quality of life scores between different groups, either at one point in time (e.g. differences between socioeconomic groups) or over time (e.g. pre/post treatment differences). However, the exclusive use of this approach has considerable conceptual and technical limitations and does not provide sufficient information to allow appropriate interpretation of quality of life data. Aggregate quality of life scores are intrinsically meaningless as they do not correspond to a specific meaningful benchmark, in terms of oral health status or disease risk. Furthermore, differences in means between groups mask important and potentially different patterns in response within groups. The minimally

important difference (MID), defined as "the smallest difference in score in the domain of interest which patients perceive as beneficial and which would mandate, in the absence of troublesome side-effects and excessive cost, a change in the patient's management" (Jaeschke et al., 1989), provides a good indication of whether the observed change in a longitudinal study (or difference in a cross-sectional study) is meaningful. Different methods (classified as either distribution-based or anchor-based) have been proposed for assessing the MID. Their use in oral health studies should signal a shift from the exclusive, but of limited value, use of significance tests and promote interpretation by providing a benchmark to assist interpretability.

## Dental public health research methodology

### Qualitative research: a tool in Dental Public Health

REBECCA HARRIS



Qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people brings to them. Qualitative methods therefore allow researchers to explore different questions (such as 'Why' or 'How') rather than questions such as 'What is the prevalence of...' or 'What is the strongest predictor of...'. Qualitative research gives a tool with which patients' experience, expectations and beliefs concerning their oral health can be explored. The emphasis on the participant's perspective gives a depth of understanding about complex issues which can be missed if only quantitative methods are used. Qualitative research is most valuable when it allows a problem or issue to be perceived in a new way, facilitating policy development or the advancement of social theory. Some examples such as the use of conversation mapping and activity theory are described in conjunction with the exploration of dental policy problems in the UK. Such exploration may lead a way through

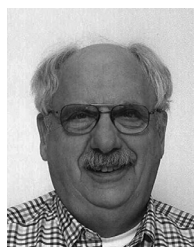
complex policy problems and suggest solutions which reach to the heart of the issue.

Thus qualitative research allows Dental Public Health researchers and practitioners to have a more rounded understanding of phenomena, with an appreciation of the context of findings which can be overlooked when using quantitative methods alone. It also allows researchers to lay aside pre-conceived hypotheses at the outset of the investigation. Previously held assumptions are therefore more readily challenged and novel approaches to difficult issues suggested when using these methods.

### Minimum reporting requirements for examiner calibration and reliability studies.

#### Reporting kappa is not enough

ALBERT KINGMAN



Diagnostic disagreements between examiners using an ordinal scaled r-level response can be systematic and/or random. The interplay of these two sources of variation is difficult to describe with any single measure such as a kappa ( ) statistic. Systematic (marginal) disagreement produces biased estimates. Random disagreement (bivariate) inflates the error variance, which increases the width of CI's, making it more difficult to detect treatment effects. The later will increase the number of subjects needed and the cost of the study. The prevalence distribution of the conditions being evaluated (subject differences) also affect the kappa values. Thus examiners should undergo rigorous calibration before the study begins. In caries studies common practice is to use and report kappa statistics to assess intra- and inter-examiner diagnostic agreement at the surface or tooth level for their calibration studies. Except for relatively rare

instances where  $\kappa$  is very large indicative of excellent agreement, merely reporting a value for  $\kappa = 0.60$  (say) provides insufficient information to assess the credibility and validity of the findings (could reflect bias or just random disagreement or relatively small subject variation). Caries data for two examiners using variants (3 and 4-level) of the 7-level ICDAS scoring system, which includes non cavitated and cavitated lesions, are used to describe and demonstrate. The need for reporting disease prevalence and a separate assessment of potential examiner bias is illustrated with sample datasets depicting confusion and even apparent paradoxical results using only kappa statistics. Maximum kappa statistics are illustrated and recommended as a surrogate measure to check for examiner bias. Linear weighted kappa statistics are useful to assess examiner association and agreement. It is suggested that at a minimum authors provide disease prevalence, observed agreement, kappa, maximum kappa, and the linear weighted kappa when reporting examiner reliability and agreement for r-level responses.

## Dental public health projects

### A periodontal risk assessment protocol

ROBERTO FARINA, LEONARDO TROMBELLI



R. Farina



L. Trombelli

Susceptibility to periodontal disease is extremely variable among subjects in terms of both incidence and progression of the disease and subject response to treatment. The nature of this variability can be found only in part (50%) in genetic heredity, the remaining susceptibility being sustained by other risk determinants which have been identified by longitudinal studies.

The evaluation of risk determinants in Periodontology is fundamental for the early identification of high-risk subjects and the formulation of individualized preventive and therapeutic strategies, which aim to the targeted control of risk factors. Subjective risk assessment consists of identifying risk factors an individual patient may manifest during the examination and history-taking process, and then making a subjective qualitative judgement as to the magnitude and role these factors

may be playing in the disease status. However, scientific evidence suggests that the judgment generated by the subjective evaluation of expert clinicians in terms of subject-based level of risk is highly variable and could result in the misapplication of treatment for some patients. In the last years, these observations on the subjectivity of risk assessment called for the development of new and more objective methods to evaluate the periodontal risk, in order to tentatively obtain more uniform and accurate information which may optimize the clinical decision making, improve oral health for patients and reduce health care costs. Recently, the Research Centre for the Study of Periodontal and Peri-Implant Diseases, University of Ferrara, proposed a simplified method (*UniFe*) for periodontal risk assessment based on 5 parameters which are derived from the patient medical history and clinical recordings.

### Evaluation of (oral) health interventions: an example in preschool children

DOMINIQUE DECLERCK, STEPHAN VAN DEN BROUCKE



D. Declerck



S. Van den Broucke

Oral health promotion campaigns for preschool children are widely developed and implemented, but systematic evaluation of the process of implementing such campaigns is scarce, and little is known about the conditions under which oral health promotion programmes can be implemented successfully. This presentation draws on current evaluation theory to demonstrate the possibilities for process and outcome evaluation of oral health promotion, using an intervention among preschool children in Flanders, Belgium, as an example. The project, called *Smile for Life*, was launched in 2003 and targeted towards newborn children (and their parents). A multi-component intervention was developed and implemented in a primary health care setting, the well-baby clinics organized by the governmental organization *Child & Family*. Approximately 1,000 children were included in the program and followed up until the age of 5 years. Outcome evaluation involved the comparison of the participating children with a control group of age-matched children who had not been exposed to the intervention, and who were followed up for the same period of time. All children were clinically examined at the ages of 3 and 5 years, in kindergarten, using a standardized methodology. In addition, parents completed questionnaires shortly after their baby was born and when their child reached the age of 3 and 5. These questionnaires had been validated prior on a pilot sample, and were used to collect information on socio-demographic characteristics of the child, oral health behaviors of the child and the parents (dietary habits, dental hygiene and preventive visits to the dentist), and the main psychological determinants of oral behavior) as identified on the basis of the *Theory of Planned Behavior* (intentions, attitudes, perceived norms and perceived behavioural control). Evaluation of the implementation process focused on the *implementation fidelity*, which acts as a moderator between the planned intervention and the intended outcomes. The implementation fidelity of the *Smile for Life* project was evaluated using a series of qualitative and quantitative methods to consider six fidelity components identified in the frameworks of Carroll et al (2007) and Hasson (2010), notably intervention complexity, the availability of facilitation strategies, the quality of delivery, recruitment, participant responsiveness, and context.

The presentation will outline the development, set-up and implementation of the *Smile for Life* project and present the results of the process and outcome evaluation. It will be argued that process evaluation of complex interventions is essential to interpret the (lack of) success, and that linking implementation fidelity to outcome evaluations contributes to understanding the conditions under which oral health promotion programmes can be successful.

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## ESCARCEL: An European observational, cross-sectional and multi-centre epidemiological study on the non-carious dental cervical lesion and associated risk factors

DENIS BOURGEOIS, ADRIAN LUSSI



D. Bourgeois



A. Lussi

If risk factors for non-carious cervical lesions have hitherto been poorly studied, better knowledge of these conditions would allow the establishment of preventive measures that seek to reduce the incidence of this condition and to diminish its impact, given that the condition has functional, aesthetic and painful consequences that impact on the quality of life of adult sufferers. Issue from the recommendations of the EGOHID project ([www.egoid.eu](http://www.egoid.eu)), an European study, including Italy, France, Spain, UK, Latvia, Finland, Lithuania, CZ was proposed, using general dental practitioners, to identify risk factors for non-carious cervical lesions as diagnosed in dental practice. A secondary aim is to record the prevalence of non-carious dental cervical lesions in a population of young adults attending a general dentist for consultation in Europe and to record the prevalence

of dentinal hypersensitivity. Apart from the risk factors for acquiring non-carious cervical lesions, the study hope to answer questions about methods of management for the lesions, how is prevention organized, which preventive strategy for which risk factors?

## Multispectral imaging and hypercolorimetry in dentistry and endo-oral dermatology

MARCELLO MELIS



Digital photography is a great resource in Medicine cause it allows documentation, storage and comparison of tissue samples of interest. Most of the photography is done using the visible portion of the electromagnetic spectrum with a strong effort to obtain images that appear to the most degree similar to the reality. The Color Science and the Color Management offer today all the tools to achieve the best color reproduction fidelity between the original scene and the printed or video observed one.

Unfortunately there are many cases where different tissues appear equal or too similar to a "visual" or colorimetric analysis to be distinguished, although they are of different nature. This can result, sometimes, in mistaking a diagnosis unless more invasive methods are used.

A better situation can be achieved extending the bandwidth of observation including reflectance in the Ultraviolet and Infrared light because very often what appears similar to the eye, presents different re-

fectance outside the visible spectrum. It is well know, for example, that melanin has a stronger reflectance in the UV (to shield the inner layers from this ionizing radiation).

But just extending the observation bandwidth is not enough. To compare observation in the visible range a whole set of colorimetric tools has been developed, and today it doesn't matter who, when, and how takes images, they are all chromatically comparable (provided the acquisition has been done in the correct way).

We extend the same concept to a wider band, ranging from 300 nm (UV) to 1000 nm (IR). So beside specific tissues acquisition techniques, we developed an extension to standard "CIE '31" colorimetry to characterize each point of a tissue with 7 colorimetric coordinates (compared to the only three in the visible). This allows a photographic non invasive inspection that results in a greater capability of distinguishing and classifying different tissues.

To achieve this we make use of a modified digital reflex camera, a set of bandpass filters, and a reference standard set of 7 HyperColor Matching Functions. The same system is then suitable of being used as well as for fluorescence imaging or only IR imaging. The definition of this extended standardized Hypercolorimetry open the door to extremely interesting developments. One of these is the development of a database of standard hypercolorimetric signatures of physiologic and pathological tissues. Everyone that takes a standard hypercolorimetric image would be able to compare with the database and have a quick response on the nature of the tissue itself. We are already doing this successfully in the field of non invasive diagnostic for the ancient painting restoration.

## Social dentistry and gnathological rehabilitation

LUIGI BAGGI



The conference will illustrate the results of the first year of activity of the Department of Social Dentistry and Gnathological Rehabilitation National Institute for Health, Migrants and Poverty San Gallicano Hospital Rome through different epidemiological data analysis and through a short video will show one of the story, of social relevance, that daily happens in the San Gallicano Hospital of Rome.

## Abstracts for posters presentations

### No. 1665 - Periodontal status in smokers and quit-smokers: Clinical findings from a group of Romanian adults

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**Aim:** The aim of the study was to investigate the periodontal condition of smokers, as related to the duration and level of cigarette consumption and to compare it with the status of past-smokers. **Methods:** The ethics committee of the Faculty approved the study and patients signed informed consent. The study population consisted of 461 healthy Romanian adults, of whom declared that were current smokers (n=399), or past-smokers (n=62). A cross-sectional study design was used. The subjects were selected from patients seeking dental care at the Faculty's clinics. All the subjects completed a self-administered questionnaire on age, oral hygiene habits, quantity of cigarettes smoked and length of time that they had been smokers. The following clinical variables were recorded during 2009-2010, by calibrated dentists: plaque index (PI); calculus index (CI); maximum probing depth (PD). Chi-square tests were used to examine the statistical significance of differences observed with categorical dependent variables. **Results:** The majority of current smokers (65%) were young, under 35 years of age, majority of quit smokers (52%) were over 50 years of age; 44% of the smokers consumed 11- 20 cigarettes/day and 17% exceeded 20 cigarettes/day. There was no significant difference in mean PI between smokers- 1.31 (SD 0.65) and former smokers-1.36 (SD 0.73). Mean CI of former smokers was 1.25 (SD 0.86), higher than of current smokers-1.02 (SD 0.69). Mean PI was 1.54 (SD 0.77) in smokers who exceeded 20 cigarettes daily, higher than 1.08 (SD 0.53) in subjects who smoked less than 10 cigarettes per day. Significant differences in plaque and calculus accumulation were found in subjects who smoked for a longer time (more than 10 years) as compared with subjects who smoked for less than 5 years. Deeper probing depths were recorded among smokers than former smokers, with statistically significant differences. **Conclusion:** Heavy and long-term smoking is detrimental to oral hygiene and periodontal health, but smoking cessation may be associated with a relative improvement in periodontal health. **Method of funding:** The study was funded by the Faculty of Dental Medicine Constanta from internal funds.

### No. 1666 - 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.

### No. 1669 - Oral self-care among dentists and dental students in Iran

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**Aims:** This study aimed to assess oral self-care among general dental practitioners (GDP) and dental students (DS) in Iran. **Methods:** Students were selected using a stratified cluster random sample of the 15 state dental schools in Iran. The dentists were a convenience sample from participants who attended two large annual dental congresses in Iran. Participants anonymously completed a self-administered questionnaire in 2004-2005. The Iran Center for Dental Research in Shaheed Beheshti University of medical Sciences gave ethical approval. The respondents were asked about frequency of tooth brushing (TB) flossing, and of sugary snacking (SUG) between main meals, and use of fluoride toothpaste (FTP). We defined oral self-care (OSC) as optimal for those with twice daily TB, less than daily SUG, and use of FTP always or almost always. Statistical evaluation was by Chi-square test. **Results:** Data from 980 GDPs (36% female) and 270 DSs (47% female) were analyzed. GDPs and DSs were similar regarding twice daily TB (59% vs. 57%), using FTP always or almost always (74% vs. 76%), and daily flossing (54% vs. 52%). In each aspect, these percentages were greater for women than men (p<0.03). Less than daily SUG was reported by 59% of GDPs and 40% of DSs (p=0.001). Optimal OSC was reported by 27% of GDPs, and 17% of DSs (p=0.001). Percentages of the GDPs' and DSs' fulfilling two out of three criteria included in optimal OSC were as follows: TB & FTP 44% vs. 47%, TB & SUG 35% vs. 23% (p<0.001), and FTP & SUG 45% vs. 27% (p<0.001). **Conclusions:** The findings show the need for more emphasis on preventive dentistry both in the dental curriculum and in continuing education in the future.

**Methods of funding:** Acknowledgments: Study grants from Iran Centre for Dental Research, Shaheed Beheshti Medical University, and University of Helsinki. No. conflicts of interest exist.

### No. 1670 - 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 program 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: n1= 102 children, n2=98, n3=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 program, 46.8% of all the children reported consuming many sweets in their diet. This level decreased to 30% ( $p = 0.003$ ) after the program. Before the program, 67% of the children reported brushing once a day and 33% twice a day. This improved after the program 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 program, but all brushed at least once a day afterwards. **Conclusions:** The results of the study indicated that the oral health promotion through interactive educational lesson improved oral health behavior of the children.

**Methods of funding:** Acknowledgments to the School Inspectorate of the Timis county for funding this study.

### No. 1671 - 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 institutionalized 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  $5.05 \pm 0.57$ ), n2= 50 children aged between 7-11 years (mean age  $8.67 \pm 1.22$ ), n3= 24 children aged between 12-18 years (mean age  $14.17 \pm 1.93$ ). **Results:** During the development of the study there were four dropouts because of lack of co-operation. The mean dmft for group n1 was  $7.00 \pm 2.50$ . For group n2 mean dmft was  $7.64 \pm 3.13$  and mean DMFT was  $3.2 \pm 1.95$ , and DMFT for n3 was  $8.66 \pm 2.57$ . 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 preventive approach and proper dental education for children with mental disabilities and their those who look after them, including close monitoring and periodic dental check-ups.

**Methods of funding:** Acknowledgements to the Special Care Schools Department, part of the General School Inspectorate of the Timis county, for funding this study.

### No. 1672 - Oral-systemic health among a community center for the underserved in Bucharest

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**Introduction:** Oral and general health are major public health issues, with the greatest burden in the underprivileged population. **Aim** of this cross-sectional study was to assess oral and general health and treatment needs among the institutionalised people in a homeless center, a disadvantaged community from a socio-economic point of view and with barriers to oral care (lack of a dental office). **Methods:** The Ethics Committee of University of Medicine and Pharmacy and the manager of the center from Bucharest gave approval and all but four of the residents consented. The dental examinations were undertaken by 4 dentrists in 2010 for 51 subjects (27 males) aged 22 to 84 years, according to WHO criteria (1997). The clinical examinations were undertaken in one homeless center in Bucharest, in the medical office. Subjects were clinically examined to detect any abnormal oral mucosal conditions and dryness. Oral hygiene was assessed using the Silness and Löe index. Subjects answered a questionnaire on common health risk factors. General health status and drug treatments were based on medical records. **Results:** Descriptive statistics show a poor oral status: mean DMFT 15.63 ( $\pm 9.51$ ) largely associated with missing teeth (M was 78.8% of DMFT). Subjects had modifiable behavioural risk factors: tobacco use (66%), alcohol consumption (52%), poor oral hygiene (mean score for plaque index was 2.3) and history of cancer (11%). Dental treatment needs are great: untreated decay (62%), fixed restoration (45%), removable dentures (33%). Subjects show many systemic diseases and receive multi-medication therapies; several drugs (especially psychotropic) with side-effects as xerostomia (29.4% complaint). **Conclusions:** Subjects present a series of general conditions that must be considered along with oral health status in normative treatment needs assessment.

### No. 1674 - Caries' prevalence and oral hygiene knowledge of teenagers in Cluj-Napoca

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**Aim:** To identify the influence of oral hygiene and socio-economic status (SES) on caries experience for 15-18 years teenagers in Cluj-Napoca (Romania) and its surroundings, during 2009-2010. **Methods:** A cross sectional survey was performed on a convenience sample on 367 teenagers (191 boys), aged between 15-18 years (mean age 16.3±0.81 years). It was carried out by 10 calibrated examiners, in ten randomly selected Cluj-Napoca dental offices. The teenagers were recruited when they attended for dental care. In the opinion of the authors, the sample was representative of the 15 - 18 year-old population of Cluj Napoca. There were no non-responders. Ethics approval and parents' informed consent were obtained. Plaque index (O'Leary, 1967) and D3MFT were recorded together with four items completed by parents regarding socio-demographic data (SES level)-(four questions regarding parents education, monthly income, parent's jobs, children's neighborhood/downtown schools), oral hygiene knowledge, oral hygiene habits and recall visits attended/year. Multivariate regression analysis was performed. **Results:** A total of 43 teenagers (11.7%) were caries free, mean PI was 45.7% in teenagers having more than one surface decayed, Significant Caries (SiC) was 5.3±0.48, Mean DMFT was 3.63±1.56 (boys:3.93±1.90; girls:3.33±1.11). 109 teenagers (29.7%) had pulp involvement, there were no significant differences between gender. The mean number of subjects with better oral health was higher in those having parents with middle and high SES status (mean SES 152.16↔/month/family member), (p<0.05). Multivariate regression analysis showed that only age and PI had an influence on caries. It was independent of other factors (gender, socio-demographic data). **Conclusions:** The prevalence of dental caries in Cluj-Napoca was high. Those with parents with better SES status had lower caries experience. The findings suggest more dental hygiene information should be provided to teenagers so they may be motivated to seek dental treatment on regular basis.

### No. 1680 - Oral health practices of freshmen in health related faculties in Turkey

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**Aims:** Oral health practices of adolescents are important determinants of their future status of oral health. The aim of this study was to determine the oral health practices of freshmen entering health related Faculties of Hacettepe University in Turkey. **Methods:** In this descriptive study, in 2008, the data were gathered via a self-administered pre-tested questionnaire. The questionnaires were answered anonymously in classrooms. The Ethical Committee of Hacettepe University approved the study and verbal consent to take part was obtained from the students of the Faculties of Medicine, Pharmacy, Dentistry and Health Sciences. The questionnaire included 61 questions on some socio-demographic characteristics of students, some additions and oral health related practice. It was aimed to reach all of the students; out of 964 students, 853 (88.5%) were reached. The Chi square test was performed to test the significance of the differences in bivariate analysis. The same study will be repeated after four years in the same group. **Results:** One-third of the students were male. They were between the ages of 17 and 24 years, mean age was 18.9 years±1.2. Significantly more males were current smokers (8.9%) than females (3.5%). It was reported that 82.8% of males and 94.2% of females had visited a dentist (p<0.000) at some time in their lives. More than half could not remember they were at their first visit. Only 8.9% of females and 6.8% of males were visiting the dentist regularly (p=0.002). Eight hundred and thirty seven students (98.9%) had a toothbrush; 68.9% of them reported brushing their teeth at least twice a day, 58.9% for at least two minutes. Of the students with a toothbrush, 99.2% used toothpaste. The amount of toothpaste used was chick pea sized in for 71.9% of the students. **Conclusions:** The oral health practices of the students were worse than expected. Effective oral health strategies are needed to improve oral health practices among university students.

**Methods of funding:** This study has been funded by the Research Center Office of Hacettepe University.

### No. 1681 - The status of first molars among 12 and 15-year-old Turkish children in 2004

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**Aims:** First permanent molar tooth loss can lead to changes in the dental arches throughout life. The aim of this study was to determine the status of first molars among 12- and 15 year-old children in Turkey. **Methods:** Approval was by the Committee on the Ethics of Human Experimentation at the University of Hacettepe. This study used data from a nationwide cross-sectional survey in Turkey, which was conducted to evaluate the oral health status of the Turkish population. By using a proportional stratified cluster sampling, 1,611 subjects aged 12 years and 1,507 subjects aged 15 years were examined. The data were collected in 2004 via a structured, pre-tested face to face administered questionnaire and oral examination according to WHO 1997. **Results:** The gender distribution was the same in both age groups (52.6% were female). Almost ¾ of first molars in upper jaws and 1/3 of first molars in lower jaws were healthy for both age groups. The prevalence of decayed teeth for both jaws differed between 17.6% and 27.7% for 12 year-olds, and 18.3% and 28.3% for 15 year-olds; the prevalence was higher in lower jaws. Among 12 year-olds, 3.2% of lower right first molars and 2.7% of lower left first molars were missing as a result of caries. For 15-year-olds these figures were 5.8% and 6.8% respectively. Females and rural residents had more decayed and missing teeth. Few teeth were filled; between 1.6% to 3.2% for 12-year-olds and 3.5% to 6.8% for 15 year olds. **Conclusions:** The dental health of first molars was good for 12 and 15 year-olds in Turkey. The importance of these teeth should be emphasised in the curricula of primary schools and an effective public oral health education campaign should be implemented within the public health programs of the Turkish Ministry of Health.

**Methods of funding:** This study had been funded by the Research Center Office of Hacettepe University and supported by the Ministry of Health.

### No. 1683 - Ethics reporting of dental research in Iran

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Although international agreements set the framework for research ethics, countries vary in their interpretation and implementation of these guidelines. **Aim:** This study aimed to appraise dental clinical trials published in Iranian dental journals regarding research ethics considerations. **Methods:** The study, addressed 3 areas: a) protection of human study participants b) conflicts of interest and c) informed consent, all of which are the basic framework for research ethics committees. The review was a cross sectional study of clinical trial articles in Iranian dental journals which had been ranked as scientific research journals by the Iranian committee of medical journals since 2006. All of the papers were reviewed by two calibrated reviewers. Data were analysed using software SPSS version 17. Correlations between variables were tested. **Results:** Eighty eligible papers from seven dental journals were reviewed. About 77% of papers reported that subjects were informed about the nature of the study and 70% of subjects were enrolled with written consent. About 19% of published papers declared conflicts of interest from researchers. **Conclusion:** The study showed that most of dental researchers in Iran are obtain written informed consent from participants in clinical trials. However declaring conflicts of interest is still underreported in Iranian dental journals.

### No. 1684 - Prosthodontic status and treatment needs among elderly Macedonians living in public institutions

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**Aims:** The aim of this study was to investigate the prosthodontic status and treatment needs of institutionalised elderly people in the Republic of Macedonia in relation to socio-economic factors. **Methods:** One hundred and five subjects 65-74 years old in two public elderly homes were surveyed in 2009 by dentists and specialists in prosthodontics. From a total number of 134 patients, 105 filled in a face-to-face administered questionnaire (26 were unable to because of illness and 3 refused). Their present prosthodontic status and treatment needs in relation to socio-economic factors were analyzed. Ethical approval was obtained by the Managers of the institutions and the Ethical Committee of the Faculty of Dentistry. Statistical analysis was carried out using SPSS 14 program. Analyses of correlations were made by nonparametric Fisher exact test ( $p < 0,05$ ). **Results:** Forty six of all patients (43.8%) did not have any prosthetic appliance (5 of them had their natural teeth). Fifty nine patients (56.2%) had some prosthetic appliance (54 of them had removable dentures and 5 had bridges). From the total number of 59 patients with prosthetic appliance, 14 (23.7%) could not eat with them, 18 (30.5%) did not wear them (they felt uncomfortable) and 27 (45.8%) were satisfied. The patients subjective need for prosthetic treatment on examination was 73 (69.5%). There was no correlation between the type of prosthetic appliance and necessity for new ones (Fisher exact test:  $p = 0.5819$ ). For 93 patients (88.6%) they reported that masticatory function was more important than esthetics. All of them could not get a new prosthetic appliance due to financial problems. In the last year none of them visited a dentist, in the last 5 years only 15 (14.3%) had done that, while 51 (48.6%) have not visited a dentist in more than 10 years. **Conclusions:** There is a high prevalence of edentulous institutionalised elderly people in the Republic of Macedonia. Most of the patients (69.5%) suffer because of toothless problems or problems with prosthodontic appliance as a result of their low incomes. This survey can help establishing prosthodontic treatment strategies for elderly in public homes in order to improve their quality of life.

### No. 1685 - Oral Health status among children of Minsk

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**Aim:** The aim of the present epidemiological study was to assess the dental caries status, the oral hygiene status and the gingival condition in Minsk schoolchildren. **Methods:** All subjects, or parents/carers gave informed consent. A total of 207 children (boys:  $N = 92$ , girls:  $N = 115$ ) with a mean age of 10.5 years ( $\pm 0.01$ ) from 3 randomly selected schools of one district of Minsk. Parents gave informed consent for oral examination of their children. The examination was done by 3 trained and calibrated dentists in a dental office using dental mirror and a ball round probe. Following the WHO criteria (WHO 1997) caries was assessed according the dmft /DMFT criteria. For oral hygiene and periodontal condition the OHI-S and the Complex Periodontal Index-KPI (PLeous, 1990) respectively were applied. Statistics based on the t-test at a significance level of 5%. **Results:** The index dmft was 1.7 ( $SD \pm 0.08$ ) and DMFT - 1.6 ( $SD \pm 0.08$ ). There were no statistical difference between genders. The overall caries score was 3.3 ( $SD \pm 0.1$ ) dmft+DMFT. 50% of the DMF teeth were filled (FT) and carious (DT), whereas in the primary dentition 47% of the dmft teeth were carious and 53% were filled. No. extracted teeth (MT/mt) were found. The OHI-S index amounted to 1.2 ( $SD \pm 0.03$ ) and the KPI to 0.92 ( $SD \pm 0.02$ ). There were no statistical differences between genders. **Conclusions:** In this regional group of Minsk 11-year-olds the caries prevalence in both dentitions was quite high whereas the other indicators revealed a moderate risk for oral health.

### No. 1686 - Intentions of Lithuanian oral health graduates to practice abroad

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**Aims:** To assess the intentions of general dentists, dental specialists, dental hygienists, assistants and technicians graduating from Lithuanian educational institutions in 2010 to practice abroad; to determine the major destination countries and the most important push and pull factors. **Methods:** A questionnaire survey (which was the part of an investigation approved by the Lithuanian Bioethical Committee) was carried out among all dental institution graduates ( $N = 347$ ) general dentists, dental specialists, dental hygienists, assistants and technicians in Lithuania in 2010. The response rate was 82.7%. Owing to the need for anonymity, a non-response analysis was not feasible. **Results:** 32.4% ( $n = 93$ ) of graduates from all oral health specialties mentioned their intention to emigrate from Lithuania. The highest rate of intended emigration was found among dental assistants (35.5%,  $n = 28$ )



and general dentistry graduates (26.9%, n = 28). Factors related to higher reported intention to emigrate were relatives or friends residing in other states, self-perception of personal unhappiness, or residing in large cities. As many as every fourth (23.1%, n = 37) dental hygienist, assistant and technician graduates had already planned, arranged and organised their emigration. The most important pull factors for oral health professionals' migration tended to be finance-related issues. Major destination countries from the Lithuanian oral health professionals were the UK, Ireland, Norway and Sweden. The highest rate of reported intention to emigrate was found among dental assistants and general dentists who indicated that many of them will not join the professional community in Lithuania. **Conclusion:** Intentions of graduates may differ from their real actions; however the survey gives indications about the possible magnitude of emigration of oral health professionals from Lithuania and is the first study of its kind. The results show that Lithuania is a major provider country in the context of international oral health professionals' migration flow.

#### No. 1687 - 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 the a community fluoridation preventive programme in Targu-Mures, Romania could be introduced.

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#### No. 1688 - 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-squared 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 ( $\pm 2=0.348$ , p=0.555). The corresponding mean number of diseased sextants were  $1.98\pm 0.2$  and  $2.58\pm 0.2$  (p=0.041) respectively. The mean number of sextants with bleeding ( $0.90\pm 0.1$  vs  $1.44\pm 0.2$ , p=0.066) and calculus ( $1.09\pm 0.1$  vs  $1.14\pm 0.2$ , 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 of Russia.

#### No. 1689 - Quality appraisal of published qualitative oral and public health research in Iran

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**Aim:** This study aimed to determine the number of published qualitative research in the field of public health, including dental research, in Iranian medical journals and to appraise the quality of the papers. **Methods:** One hundred and sixty five public health articles have been published in 170 editions of Iranian Medical Journals between 2000 and 2010. From these 48 papers were selected randomly. The papers were appraised by two calibrated reviewer using the Critical Appraisal Skills Programme (CASP) appraisal framework for qualitative research. **Results:** Only two studies (4%) were on dental topics. About 80-90% (38 to 43) studies had adequate reporting of aims, study design, recruitment, data collection, data analysis, findings and implications of the research. Only 12 articles (25%) had adequate discussion of the study limitations. The overall assessment showed that 27 papers (about 56%) were classified as well conducted. **Conclusion:** In Iran, qualitative methods are underutilised in dental research. The quality of qualitative research in public health topics in the medical journals of Iran is mediocre.

### No. 1693 - Dental erosion in young adults in Tirgu-Mures, Romania

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**Aims:** As the consumption of soft drinks with erosive potential is constantly increasing in Romania, a cross-sectional study was carried out to assess the prevalence of dental erosion in young adults living in Tirgu-Mure<sup>o</sup>, Romania, and to identify any association between acidic drinks intakes and erosive lesions. **Methods:** In January 2010, a representative sample of 410 subjects was randomly recruited in Tirgu-Mures, Romania by written invitation. The participants (233 male, 177 female), aged 18 to 27 years, were subjected to oral examination with full mouth recording. Ethical approval of the study protocol was obtained from the Research Ethics Committee of University of Medicine and Pharmacy, Tirgu-Mure<sup>o</sup>, Romania. Subjects signed an informed consent form. There were no refusals to participate. For the assessment of erosive tooth wear the erosion index according to Lussi (Lussi, 1996) was used. A survey using a questionnaire regarding lifestyle and drinking habits was carried out. Statistical analysis was performed with Graph Pad Prism software. Differences in the prevalence of dental erosion according to exposure to risk factors and gender were evaluated using Fisher's exact test. The level of significance was set at  $p < 0.05$ . **Results:** The prevalence of dental erosion in the young adults was 34% (140 subjects). Significantly more erosive lesions were found in subjects with regular exposure to acidic drinks ( $p = 0.006$ ). Questionnaire items on acidic beverages intakes showed that 66% (270 subjects) of respondents were usually consumed more than 400 ml acidic drinks/day, significantly more in males than females ( $p = 0.03$ ). **Conclusions:** Acidic beverage consumption and the prevalence of dental erosion was high in the screened subjects, compared to data obtained from previous studies. The results appear to indicate that high and regular consumption of acidic drinks represent aetiological factors for dental erosion and suggest the necessity for prevention.

### No. 1694 - Clinical evaluation of fissure sealants with and without bioactive glass, 36 months results

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Nowadays dental materials and fissure sealants containing bioactive glass which releases fluoride and calcium ions. Their caries prevention efficacy has not yet been proved in long-term clinical studies. **Aim:** To compare clinical efficacy of sealants with and without bioactive glass 36 months' after their application. **Methods:** One hundred and seven randomly selected children from a randomly selected Moscow comprehensive school participated in the study between 2006 and 2010. Sealants with («Esterfill Ca/F») and without («Esterfill FOTO») bioactive glass («Medpolymer», Russia) were applied to the occlusal surfaces of 121 permanent first (52 children aged 7-8 years) and 116 second (55 children aged 12-13 years) molars. Inclusion criteria were: at least one permanent first molar (7- 8 year-olds) and one second permanent molar (12- 13 year-olds) fully erupted and caries free. For the sealants' clinical evaluation the following criteria were used: marginal adaptation, sealant retention, occlusal caries development, roughness of sealant surface, colour change around sealant. Ethics approval was granted for the study and each parent gave written consent for their child to take part. By the final examination 8 children had dropped out the study. **Results:** Thirty six months after sealant placement marginal defects of «Esterfill Ca/F» were detected in 4 (7.6%) first and 10 (16.9%) second molars, «Esterfill FOTO» - in 4 (6.9%) and 4 (7.9%) respectively. «Esterfill Ca/F» was retained in 34 (64.2%) and 51 (86.4%), «Esterfill FOTO» - in 42 (72.4%) and 41 (80.4%) first and second molars. During the study, occlusal caries developed in 2 (3.8%) first and 1 (1.7%) second molars sealed with «Esterfill Ca/F» and 5 (8.6%) first and 3 (5.9%) second molars sealed with «Esterfill FOTO». For «Esterfill Ca/F» the number of teeth with sealant surface roughness increased to 25 (47.2%) and 31 (52.5%), «Esterfill FOTO» - to 12 (20.7%) and 9 (17.7%) respectively. There was visible partial colour change around 3 (5.7%) and 8 (13.5%) sealants in first and second molars sealed with «Esterfill Ca/F» and 6 (10.3%) and 7 (13.7%) - with «Esterfill FOTO». **Conclusion:** «Esterfill Ca/F» sealant containing bioactive glass had a higher preventive effect though it showed the lowest rate of complete retention and marginal adaptation.

### No. 1695 - Personal and professional achievements of alumni in dental practice

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**Aim:** To assess opinions of alumni from the Institute of Odontology, Vilnius University about personal and professional achievements in dentistry. **Methods:** On October 22nd, 2010 all 105 participants at an alumni meeting were given an anonymous questionnaire seeking views on their personal and professional achievements. The questionnaire was approved by the Lithuanian Bioethical Committee Nr. 59, 2007. The answers were presented on a 3 point Likert scale, allocated according to the degree of achievement with the given dentist's quality. Statistical analysis by the Chi squared test. **Results:** The survey response rate was 83%. 67 (77%) of the respondents were females and 20 (23%) – males. The average age of respondents was 28 years, with a mean duration of professional experience of 4.3 years. 86 (99%) of the alumni reported insufficient manual skills after graduation. 70 (80%) considered communication skills, honesty, respect for the patient, neat clothing, and a precious smile as their most significant personal qualities. As major professional achievements the respondents highlighted the ability to explain a treatment plan to the patient, understanding their problems and expectations and ability to maintain confidentiality. However, some indicated poor dental practice management skills and insufficient knowledge in ergonomics and the statutory regulations. Respondents with eight and more years of work experience indicated as more significant their qualification ( $p < 0.001$ ), manual skills ( $p < 0.001$ ), self-respect ( $p < 0.01$ ), reasoned decision making ( $p < 0.001$ ), ability to control patient fears ( $p < 0.002$ ) and compassion during painful procedures ( $p < 0.03$ ). **Conclusion:** Understanding the most significant as well as insufficient personal and professional achievements leads alumni to the development of their own personal and professional skills, which are likely to be essential for more efficient dental health promotion and prevention of oral diseases – the core objectives of public dental health.

### No. 1696 - Influence of oral health preventive program on saliva enzymatic activity in patients with xerostomia

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**Aim:** To measure the influence of a preventive program 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 program 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 ( $1.9 \pm 0.3$  ml/min) were significantly ( $p < 0.001$ ) lower than in the control ( $4.3 \pm 0.4$ ). Mean values of alkaline phosphatase and peroxidase activities were  $30.5 \pm 1.9$  u/l and  $12.2 \pm 1.1$  iM/min/l respectively in the test group,  $7.2 \pm 0.3$  u/l ( $p < 0.001$ ) and  $26.4 \pm 4.2$  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  $2.8 \pm 0.2$ , ( $p < 0.05$ ) alkaline phosphatase activity diminished to  $15.4 \pm 0.9$  u/l ( $p < 0.001$ ), while peroxidase activity increased to  $15.5 \pm 1.8$  iM/min/l ( $p > 0.05$ ). In the control group there was no significant difference between baseline and final data. **Conclusion:** A preventive program including «BioXtra» dry mouth care system usage promotes improvement of saliva biochemical parameters in diabetic patients with xerostomia.

### No. 1697 - Locus of control and oral hygiene in adolescents

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**Aim:** To test if oral hygiene levels in adolescents associate with Locus of Control (LOC) after controlling for background factors. **Methods:** The study was performed in 2010 after receiving the permission from the Bioethics Committee of the Ministry of Health of Lithuania. All 12-13-year-old adolescents from three randomly selected secondary schools were invited to participate in the study. Written informed consent was obtained from both adolescents and their parents or guardians, the response rate was 69.6%. The total sample comprised 336 adolescents. The structured questionnaire included questions about demographic characteristics, toothbrushing frequency and the previously validated Dental Beliefs questionnaire for assessment of adolescents' LOC. An Individual Quantitative Plaque % Index (IQPI) was used as a clinical outcome measure. Factor Analysis was used for LOC scales to study the relationships among interrelated variables. Pearson Correlation was used to relate the LOC variables with the IQPI. For other bivariate comparisons an Independent Sample t test or one-way ANOVA with post hoc Bonferroni adjustment was applied. Linear Multiple Regression was employed to evaluate the joint associations between different independent variables and the outcome measure. **Results:** In the bivariate analyses, socio-economic status (SES) ( $p = 0.012$ ), number of children in the family ( $p = 0.003$ ), and frequency of toothbrushing ( $p = 0.001$ ) were related to IQPI. Linear Multiple Regression model was significant ( $p = 0.005$ ), but only "SES" and "toothbrushing frequency" were statistically significantly related to the IQPI. **Conclusions:** Only SES and toothbrushing frequency explained variation in dental plaque levels among adolescents. The hypothesized relationship between LOC and oral hygiene levels was not confirmed.

### No. 1698 - Early Childhood Caries and Oral Hygiene in 6-23 Month Old Children in Volgograd

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**Aim:** To study early childhood caries (ECC) and oral hygiene in 6-23 month old children in Volgograd. **Methods:** The investigation was organised in the central District Paediatric Clinic, Volgograd, from January to April 2010 in the National Health Program. In this program all children should visit a dentist at the age of 9 and 12 months, but some mothers organised dental examination for their children earlier or later. 215 children from 6 to 23 months of age, who visited a dentist for the first time, were enrolled in the investigation (24.2% of all district residents of this age). Out of all examined children 131 were under 12 months (the 1st group) and 84 were over 12 months of age (the 2nd group). These groups made 97.8% and 72.4% of paediatric clinic visitors in the investigation period. An average age was 9.51 and 15.01 months in the 1st and 2nd groups respectively. ECC (d3-4mft>0) and visible dental biofilm (plaque) prevalence were calculated. Mothers were interviewed about oral hygiene for their children. The study was approved by Regional Ethics Committee. Mothers' informed consent was obtained. **Results:** ECC was revealed in 3 (1.4%) children (all in the 2nd group, 3.6%); 84 (39.1%) children had visible dental biofilm: 32 (24.4%) and 52 (64.9%) in the 1st and the 2nd groups respectively. Tooth brushing was provided by the parents for 71 (33.0%) children (29 in the 1st group and 42 in the 2nd group - 22.1% and 50.0% respectively), the rest of the children did not have tooth brushing at all. 24 (11.2%) parents brushed the children's teeth once a day or less (8 in the 1st and 16 in the 2nd group - 6.1% and 19.0% respectively), 47 (21.9%) parents - twice or more (21 in the 1st group and 26 in the 2nd group - 16.0% and 30.9% respectively), 20 (9.3%) parents used toothpaste for the children's tooth brushing (6 in the 1st group and 14 in the 2nd group - 4.6% and 16.6% respectively), only 13 (6.0%) parents used fluoridated toothpaste (5 in the 1st group and 8 in the 2nd group - 3.8% and 9.5% respectively). In general only 83 (38.6%) mothers were informed about oral hygiene for young children; most mothers (132, 61.4%) were not informed. The sources of information on oral hygiene for young children mentioned by the mothers were: 19 (23.0%) - magazines for parents, 15 (18.1%) - advice from friends, 13 (15.7%) - information from the Internet, 13 (15.7%) - doctor's recommendations, 10 (12.0%) - advertisements, 12 (14.4%) - others (one mother could name several sources). **Conclusions:**

Parents provided low level of oral hygiene for 6-23-month old children; most mothers did not have information on this matter; doctor's recommendations were not considered superior among other sources of information.

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### No. 1699 - Need for school dentistry and results of schoolchildren's dental care in Volgograd

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**Aim:** To study people's opinion of school dentistry and to review the results of dental care for schoolchildren in Volgograd. **Methods:** The opinions of school dentistry were studied by questioning 11 to 17-year-old schoolchildren, parents, teachers and paedodontists. Questioning of 500 schoolchildren and 250 parents was organised in 2 schools of 2 city districts from March to May 2010. The response rate was 359 (71.8%) schoolchildren and 174 (69.6%) parents. All 112 paedodontists in Volgograd, 506 teachers at 9 schools in 5 city districts were asked to participate in the investigation and received a questionnaire. The response rate from these two groups was 108 (96.4%) and 478 (94.5%) respectively. A dental examination was held in school dental rooms as part of routine check-up. The study was approved by the Volgograd Regional Ethic Committee and written informed consent was obtained from all persons over 15 years old and from parents of children under 15 years old. The data on dental care for schoolchildren from all Volgograd schools with dental rooms was used. The mean DMFT index for 12 and 15-year-olds was estimated from the Volgograd data from National Dental Survey of 2008. **Results:** Dental care was provided in dental rooms of 100 schools (70.4% of 142 municipal schools). About 60,000 7 to 17-year-old schoolchildren were provided with dental care annually (58,644 in 2009, 64,316 in 2010). Oral health was examined in 47,502 schoolchildren (81.0%) and 55,220 (85.9%) in 2009 and 2010 respectively. 8,646 (18.2%) of the examined schoolchildren in 2009 and 10,019 (18.1%) in 2010 were caries free. 21,423 (45.1%) and 25,728 (46.6%) respectively had treated carious teeth, and 17,433 (36.7%) and 19,473 (35.3%) respectively had untreated carious lesions. Oral Hygiene Index - Simplified was poor (OHI-S >3) in 26.7% children. The mean DMFT index was 2.93 in 12-year-olds, 4.53 in 15-year-olds. Dental treatment was completed in 11,837 (67.9%) children who were in need of treatment in 2009 and 13,475 (69.2%) in 2010 (on average one child received 2.35 fillings); single fluoride varnish was applied on permanent teeth of 34,344 (72.3%) children in 2009 and 41,360 (74.9%) in 2010. On average fissures and pits were sealed only in 0.4 teeth (in one child). 2,074 (11.9%) children in 2009 and 1,792 (9.2%) in 2010 refused dental treatment in school dental rooms and were referred to paedodontic clinics. The analysis of the questionnaire data reveals high level of demand for school dentistry from parents (167 positive answers out of 174 - 96.0%), but significantly fewer positive answers from adolescents (187 out of 359 - 52.1%). All school teachers (478) and 94.3% (102 out of 108) paedodontists considered school dental rooms necessary for children. **Conclusions:** Most adults recognised high level of need for school dentistry but only half children did so; school dental services provided oral examination and caries treatment more than prevention; school dentistry should expand effective preventive strategies such as fissure sealing, oral hygiene improvement, fluoride use.

**Methods of funding:** The authors would like to acknowledge the heads of municipal dental clinics for help and all parents, schoolchildren, teachers and paedodontists, who participated in questioning survey. Sources of funding: Volgograd State Medical University.

### No. 1700 - Mouthwash as treatment for oral halitosis of young clinically healthy individuals

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**Aim:** To investigate the effects on self-perceived oral halitosis (SPOH) of healthier diet, improved oral hygiene (interdental cleaning aids (ICA) and mouthwash), at clinically healthy dental students in 2010. **Methods:** We randomly selected 169 students (95 women, 71 men, mean age=21.5 years) among all dental students of Cluj-Napoca. Pre-calibrated dentists recorded their ICDAS II index (scores 0 to 6); periodontal pockets depth and Plaque Index separately for recent plaque (PI0-3) and for that older than 3 days (PI3). The students filled-in a twelve items pre-validated questionnaire regarding SPOH, socio-demographic data, diet, individual hygiene habits. All subjects were asked to use ICA in the evenings, being randomly divided into three equal groups to rinse twice a day with mouthwash based on fluoride (F group), on plant extracts (P group) and on chlorhexidine (C group). After a week PI0-3 and PI3 were recorded again and they filled in another pre-validated questionnaire for SPOH and diet. Ethics approval and an informed consent were obtained. Descriptive and multivariate regression analysis was performed. **Results:** Regular diet included fast-food for at least one meal for 118 subjects (69.82%) initially and for 38 subjects (22.48%) on second questionnaire. Initially 25 students (14.79%) used ICA. SPOH decreased from 23.2% (39 students) to 10.4% (5 subjects). The mean PI0-3 decreased from 38.69% to 21.83% and mean PI3 from 12.27% to 8.69%. The mean ICDAS values were 2.8 (SD= ±1.82) with a D3MF-S index of 4.7 (D=1.48 M=0.52 F=2.70). The logistic regression model revealed that monthly income, oral hygiene and diet had a statistically significant influence on SPOH (p<0.05). The P-group had the most significant decrease of oral halitosis (p<0.05). **Conclusions:** SPOH can be diminished in young, clinically healthy individuals if they are informed and motivated for healthy diet and good oral hygiene associated with chlorhexidine or plant extracts mouthwash.

### No. 1701 - A critical appraisal of the reported methodologies of papers published in Iranian dental journals

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**Aim:** The purpose of our study was to carry out a critical appraisal of the methodology of reports of papers in Iranian dental journals, to detect the occurrence of publication bias, specifically positive- outcome bias. **Methods:** 100 papers which were published in 10 dental journals in Iran over the past 15 years (1995- 2010) were randomly selected. Each article was classified according to methodological design to diagnosis, etiological, case reports and prognosis studies. The study sample was criti-

cally appraised using the Critical Appraisal Skill Program (CASP). We used the CONSORT checklist (2010) for assessing the articles. Ten items were analysed by two separate reviewers. **Results:** Aetiological studies were more frequent (68%) and case reports were less frequent (32%) in the study sample. Some studies have poor design and sampling method. Seventy percent (70%) of published reports were influenced by positive outcome bias. None of the articles mentioned a power calculation for the sample size. **Conclusions:** According to our research, there were many items that had not been mentioned in these articles. The knowledge of authors should increase in order to have properly designed articles. The journal peer review team should make more precise judgements by following the CASP and CONSORT guidelines.

### No. 1702 - Prevalence and explanations for oral halitosis in clinically healthy students

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**Aim:** To investigate the self-reported prevalence of oral halitosis (SPOH), its intensity throughout the day, the treatment of halitosis, and to find possible influences of oral hygiene habits on SPOH, in clinically healthy dental students in 2010. **Methods:** We randomly selected 170 students (96 women and 71 men, mean age=21.5 years) among dental students of Cluj-Napoca. Pre-calibrated dentists recorded their dental chart according to ICDAS II index (scores 0 to 6), periodontal pockets depth and if the subject had orthodontic appliances. On a pre-validated questionnaire the students filled-in twelve items regarding SPOH, socio-demographic data, diet, individual hygiene habits. Ethics approval and informed consent were obtained. Descriptive and multivariate regression analysis was performed. **Results:** 36 subjects (21.17%) had gingivitis and 3 subjects (1.76%) had 1 to 4 periodontal pockets of 3-6 mm depth. The knowledge regarding tooth brushing were correct for 158 students (92.94%). 26 students (15.29%) used interdental cleaning aids. 60 students (35.7%) were smokers. The diet was fast-food oriented for at least one meal for 118 subjects (69.41%) with more than 70% of the calories coming from carbohydrates, among which half was hidden sugar. SPOH affected 39 students (22.94%). 32 subjects (18.82%), had never asked for medical, or for dental treatment and used mouth-spray and chewing-gum to hide the halitosis. The mean ICDAS values were 2.8 (SD= ±1.82) with a D3MF-S index of 4.7 (D=1.48 M=0.52 F=2.70). The logistic regression model revealed that monthly income, smoking, oral hygiene and diet had a statistically significant influence on SPOH ( $p < 0.05$ ). **Conclusions:** Although SPOH affected one fifth of this group of young clinically healthy individuals, they ignored the problem and rarely asked for investigations and treatment. More information about oral halitosis explanatory factors could decrease its prevalence.

### No. 1704 - Oral health status and parents behaviour among preschool children in Marijampole, Lithuania

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**Aim:** The aim of the study was to describe the prevalence and severity of dental caries, oral hygiene status and to assess parental knowledge and behaviour among preschool children attending kindergartens. **Methods:** The sample size of a total of 390 children aged 3-5 years old, was based on the assumption of the prevalence of dental caries being 54%. From the ordinary kindergartens in the area every third one (5 out of 15) was selected. The children's parents were previously informed about the aims of this study and gave their written consent. Dental caries was evaluated according to WHO 1997 criteria at the cavitation level, oral hygiene by Silness- Loe (1964) Plaque index. One of the authors (ZJ) carried out all the examinations. A questionnaire inquiry was performed among parents (390 returned out of 440) invited to participate; response rate 87% to assess opinion about their children's oral health status, oral hygiene habits. Data collection was carried out in year 2009. The Ethics Committee of the Kaunas University of Medicine approved the study design. Statistical data analysis was performed by using SPSS. For qualitative indications' comparison between exploratory groups Chi-square test was used, for quantitative ANOVA. Statistical significance was assumed when  $p < 0.05$ . **Results:** Prevalence of dental caries was 62% with mean dmft 2.9 (SD3.1). Very good oral hygiene was found in 16%, good in - 38%, satisfactory - in 33%, bad - in 13% of the examined children. An association between dmft and oral hygiene was found: children with higher dmft had worse oral hygiene (by ANOVA  $F=32.4$ ;  $df=3$ ;  $p < 0.001$ ). More than half of the parents 68% reported brushing their teeth regularly. Toothbrushing after the first tooth eruption started in 25% and 72% are regularly brushing teeth for their children. **Conclusions:** There is a high prevalence of dental caries in 3 to 5-year-old children in Marijampole, which is associated with poor oral hygiene. This suggests that to reduce dental caries and to improve oral hygiene habits among preschool children implementation of preventive and educational programmes are required.

### No. 1706 - Factors associated with burning mouth syndrome in a group of Iranian women

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**Aims:** Burning Mouth Syndrome (BMS) is defined as burning and pain in the oral mucosa accompanied by dry mouth & dysgeusia (taste disorder), usually without any clinical and/or laboratory findings. This condition has a negative effect on patients' quality of life and can be a significant health problem. The aim of this study was to assess major factors associated with BMS in menopausal and non-menopausal women at dental clinics of Gorgan (Iran) in 2009. **Methods:** This cross-sectional study was performed on 450 female patients aged between 30 to 60 years, routine attendees at the Gorgan dental clinics in 2009. After obtaining consent and explaining the aims of study to patients, the data forms were completed for all the 225 menopausal women and 225 non-menopausal women by the one dentist. For patients with burning mouth symptoms and no history of systemic diseases, intraoral examination was performed. Diagnosis was made on the basis of patients' complaints. In addition to descriptive statistics, t-test, Chi-square and Anova tests were applied to analyse the data. **Results:** In total, 62 cases (13.8 ± 0.03%) consisting of 51 post-menopausal women and 11 non-menopausal women, suffered from BMS. Menopause was predictor of an increased prevalence of BMS in women 30 to 60 years of age (odds ratio=4.45). The anterior two-thirds of the tongue bilaterally, was the most frequent location of symptoms (55 patients, 88.7%). Sixteen recorded variables had a positive cor-

relation with BMS ( $p < 0.02$ ), of which seven factors; menopause, high level of education, presence of systemic diseases, recent medications, anti depressants, parafunctional habits & gingival bleeding after brushing, according to logistic regression analysis were significantly related to BMS. **Conclusion:** The prevalence of BMS in Gorgan was high and the major risk factor associated with BMS was found to be the menopause.

### No. 1707 - Oral Hygiene Practices and Diet reported by headteachers 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 headteachers. 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.

**Methods of funding:** Grant IGA MZ CR reg. No. NS/10353-3.

### No. 1708 - Moral foundations of oral health policy-making: a study on ethical aspects of taxing

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Injustice and inequality in oral health and oral healthcare is a quandary that may be lost in the clinical perspective of individual dentists, but it should be addressed from the holistic viewpoint of dental public health. The increasing gap between the oral health of upper and lower classes in many communities, especially developing ones, is an important issue in dental public health. For example, luxury and cosmetic dental services are more and more demanded by richer people, while basic oral health needs of the most deprived groups of society may not be met. Among suggested solutions for this dilemma, "taxation" is an important option. Putting tax on luxury oral health services, for example, could be considered as a resource pooling method to then provide basic oral health care for disadvantaged people. But the question remains: "Is it ethically right?". The answer ultimately depends on the dominant moral system of the community and its policy makers. Libertarian liberals would not stand such policy since they consider it illegitimate, while egalitarian liberals may agree with it because it is in favour of the least-advantaged members of society. Subjective utilitarians possibly compare the changes in the perceived utility of taxpayers and gainers, whereas objective utilitarians refer to cost-effectiveness analysis. Exploring these moral systems and their implications for oral health policy-making is an essential step in dental public health studies.

### No. 1709 - Prevalence of edentulousness In Fars province, South Iran

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**Background:** It has been shown that demographic and socio-economic are important factors affecting edentulousness. **Aim:** The aim of this study was to describe the distribution of these factors among those seeking to replace missing teeth in the urban area of the Fars province, in the south of Iran. **Methods:** A cross-sectional study was designed by the Oral Health Office of the Fars province. A questionnaire on demographic and socio-economic status of the middle-aged and elderly was developed and tested in a pilot study. Ethical approval was obtained from Shiraz University of Medical Sciences. Thirty state dental practices in urban areas were selected by multi-stage randomisation. Patients who attended these practices seeking replacement of, or asking for advice about their lost teeth in a specific period of 2010 were asked to join the study. The purpose of the study was explained to those patients. They were free to decide whether or not to join the study. Completion of the questionnaire was assumed as implied consent. In each practice, the study was continued until 50 patients had both completed the questionnaire and had their mouth examined. The association of each factor with the number of lost teeth was assessed by t-test or ANOVA and then by Linear regression after adjusting for age. The tests were repeated for those who were edentulous. **Results:** Data on 1500 patients, 56.6% males and 43.4% females, were collected. Sixteen percent of cases (N=239) were edentulous while the remainder had partial tooth loss. Age, not surprisingly, was the strongest factor affecting tooth loss. Accessibility and availability (due to other factors rather than the distance) from dental services were other important factors associated with the number of lost teeth. Being a man, having less than 12 years of official education, living in a slum area, having an income of less than the minimum monthly wage, and having a physical disability were factors that remained significantly different between those who were edentulous and those with partial tooth loss, after adjustments were made for age. **Conclusion:** In the group studied, a significant association existed between edentulousness and socio-economic status, age, type of neighbourhood, and gender.

### No. 1710 - Early childhood caries in 2-3 year old children 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 $\times$ 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 $\pm$ 0.36 and d(1)mfs value was 3.93 $\pm$ 0.74, where d-component (2.10 $\pm$ 0.35) and ds- component (3.53 $\pm$ 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 $\pm$ 0.59 and d(1)mfs was 14.87 $\pm$ 1.65. The SiC was 6.28 $\pm$ 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.

### No. 1713 - Evaluation of the preventive program

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**Aim:** This study is an evaluation of the preventive program Healthy Smile 4 and 8 years after implementation. Preventive programs as part of primary preventive care should improve child oral health. **Methods:** The study was approved by the Ethical committee of the Faculty of Medicine in Hradec Králové. Altogether 150 children aged 6.16 (SD 0.03); 50 from three elementary schools were involved. At school A they received a preventive program Healthy Smile (education, training, topical fluoridation), at school B – preventive program Healthy Teeth (education) at school C – no preventive program (control). Inclusion criteria: informed consent, no systemic disease. Children were examined using standard methodology recommended by WHO (1997). First examination has been conducted at the onset of study (2001), the second in 2005 (after 4 years), the third in 2009 (after 8 years). Calculated parameters: % caries free, DMFT, DT, FT and RI. The results were analysed statistically (ANOVA). **Results:** Baseline data: mean DMFT 0.07 (SD 0.01) with no significant differences among A, B and C groups. In 2005 and 2009 the DMFT score was significantly lower in children in group A compared to B 1.1 vs. 1.88 and 2.24 vs. 3.76 respectively. No significant difference in DMFT score was found between school B and control. Children in group A had a significantly lower number of filled permanent teeth in both 2005 and 2009. Children in group A had a significantly higher percentage caries free when compared to school B and control both in 2005 and 2009 - 44.5 vs. 28.6 vs. 24, 48.0 vs. 16 vs. 22.6. There was no significant difference in restorative index. **Conclusions:** The results confirmed the importance of practical training in tooth brushing in oral hygiene education boosted by topical application of fluorides.

**Methods of funding:** Supported by the grant IGA, Min. of Health No. NS/10353-3.

### No. 1714 - Gender differences in oral health behaviour among students of different universities

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**Aim:** To evaluate oral health behaviour of university students according to their gender and study field. **Methods:** A random sample of students studying in the second semester or higher of the Isfahan University of Medical sciences (n = 240 from 6 institutes) and the Isfahan University (Literature and Engineering sciences) (n = 400 from 5 institutes) was chosen in 2010. Data on tooth brushing frequency and use of dental floss and fluoride toothpaste were collected by a self-administered questionnaire. A question with 11 items each using a five-point Lickert scale was employed to assess their motives for choosing toothpaste. Ethical approval was obtained. The study sought verbal consent from each student and was based on a voluntary participation. Statistical comparisons were made using the Chi2 test. **Results:** Age of participants ranged from 18 to 29 years. Girls completed 68% of the questionnaires. The majority of students (n = 524, 82%) reported brushing their teeth at least once daily. Girls reported brushing their teeth more frequently than the boys ( $p<0.05$ ). Forty four percent of the students (n = 281) reported flossing their teeth. Flossing was reported as more frequent among the girls ( $p<0.05$ ). Most of the students (n = 496, 77%) reported using fluoride toothpaste regularly with no difference between the genders. The university faculty attended had no effect on the oral health behaviours. Comparing the institutes, medical and nursing students reported flossing and using fluoride toothpaste less frequently than the others, while these behaviours were more frequent among dental students than their counterparts ( $p<0.05$ ). For all students, the least important reason for choosing toothpaste was “price of toothpaste”, while the most important motives were “feeling of freshness”, “whitening”, and “having nice smell and flavour”. These encouraging motives for the girls were more important than the boys ( $p<0.05$ ). While students of Isfahan University preferred a toothpaste for its “whitening”, “type and shape of tube” was more important reason for students of Isfahan University of Medical Sciences ( $p<0.05$ ). Motives like “dentist advice”, “anti-caries agents”, and “fluoride” were important for dental students, but these motives were surprisingly not so important especially for nursing and general health students ( $p<0.05$ ). **Conclusion:** In spite of different study backgrounds, gender differences seem to be

an important factor influencing oral health behaviour of the university students. This factor should be considered in public oral health policies.

### No. 1718 - Methodology for a study of periodontal infection with cardiovascular disease

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**Background:** Studies have suggested an association between periodontal pathogens and cardiovascular diseases, a number of factors are involved. Against this background it is proposed to perform two studies, whose aims are: 1. To investigate the effects of health promotion interventions on periodontal health and 2. To study the effects of periodontal treatment on general health indicators and cardiovascular risk. **Methods:** There will be two Randomised Controlled Trials (RCTs). The first is a health promotion RCT, in which oral factors of 300 male patients will be followed as a cohort. Later in a second these men will be randomly assigned to one of three oral intervention groups. The A-group will be given one session of health information by a nurse. The B-group will be given both health information by a nurse and an exercise intervention. The C-group will be a control group and will receive the B-group's intervention after a one-year follow-up. The second (dental) study will take place in two partstages in two parts. The men will undergo a full-mouth clinical periodontal examination at six sites per tooth (third molars excluded) carried out by dental hygienists who have been calibrated by a periodontist. All subjects will receive standardized instruction in oral hygiene and be followed up after 12 months. Outcome criteria will be: In first RCT, exercise activity and cardiovascular risk. In the dental RCT both general and specified CVD risk factors such as periodontal health indicators.

### No. 1759 - Reliability of the Cariogram Software in a Sardinian Population

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**Aim:** The aim of this paper was to evaluate the reliability of the Cariogram computer programme by comparing the Cariogram profile at baseline with the actual change in caries disease in the same group during two years. Cariogram takes several risk factors of caries aetiology into account and lists the strength of these background factors in a particular individual using an algorithm with a "weighted" analysis of the data. **Methods:** In 2007, the caries risk profile in a group of Sardinian schoolchildren (957) aged 7-9 years using the Cariogram software was assessed. Dental examinations were done in schools. Re-examination for caries was done after two years with 862 of the children (drop-out 9.9%). The examiners were blind to the baseline results. Individuals were divided into five groups from the highest risk group, (0-20% chance of avoiding caries) to the lowest predicted risk (81-100% chance of avoiding caries). Each child was re-examined using the same procedures as at baseline. **Results:** The percentage agreement of intra-examiner reproducibility was high (Cohen's Kappa 0.87). A significant association was observed between the five Cariogram categories recorded at baseline and  $\Delta$ -caries incidence ( $p < 0.01$ ); i.e. where the Cariogram predicted a very low chance of avoiding caries (0-20%) 89.2% of the subjects in this group showed one or more new lesion, while where Cariogram predicted a very high chance of avoiding caries (81-100%) only one subject (0.3%) showed one or more new lesions. Logistic regression (using the presence of one/more new lesions as dependent variable) showed that the Cariogram was the most powerful explanatory variable. **Conclusions:** The Cariogram software predicted caries increment more accurately than the other explanatory variables. Cariogram allows more objective handling during data interpretation.

### No. 1762 - Regular or individualised recall intervals in the Finnish Public Dental Service?

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In Finland the Public Dental Service (PDS) advises individualised recall intervals tailored to patient needs. Longer intervals should make resources available for more people and increase service efficiency in the PDS. **Aim:** To study the regularity of dental visits in the PDS. **Methods:** Finnish residents have unique identifiers and can be traced in the PDS. Baseline data on patient visits were requested in 2008 and retrospectively followed from 2008 to 2006. Suitable data were available from 73 of the 194 health centre dental clinics (37.6%), representing a population of 2.3 million people (44.2% of the total population). **Results:** In 2008, about one third (34%) of all inhabitants had visited the PDS in the 73 health centres studied. Of them, 44% were 0-17 year olds, 48% 18-50 year olds, and 9% older. These proportions did not vary according to the size of the PDS. Of those having visited the PDS in 2008, 59% of 0-17-year olds had annual visits during the 3-year period, 31% had been seen in two of the years and 10% in 2008 only. Annual visits for children were most usual in small municipalities. For adults (18-50 years), the distribution of intervals was more even: 35% had visited annually, 34% twice and 31% once (in 2008 only) during the study period. For older adults (50+ years) the corresponding frequencies were 44%, 29% and 27%. **Conclusion:** In the population studied, annual visits to the PDS seem to have remained the norm among children with longer intervals seen among adults. This may indicate both use of true individualised recall intervals based on need, or outdated practices. Lack of resources probably has some effect, too.

### No. 1763 - Does children's oral health promotion program influence mothers' behavior?

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**Aim:** The aim was to determine if a multi-level oral health promotion program (OHP) implemented in 2001-2005 among school children (11-12-yr-olds at baseline) in Pori, Finland, improved the behaviour of mothers oral health-related behavior 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 toothbrushing 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 behaviors (sugary drinks -24% vs. -19%, sugary snacks 0% vs. +6%, xylitol products +17% vs. +7%, use of dental floss +35% vs. +25%, and toothbrushing +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 behaviors.

**Methods of funding:** Supported by the Juho Vainio Foundation and the Finnish Dental Society Apollonia.

### No. 1764 - Is adolescent's dental fear associated with use of cigarettes or snuff?

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**Aim:** The aim was to determine if dental fear in adolescents is associated with use of cigarettes or snuff. Among adults those with dental fear have been reported to smoke more often than those without dental fear. However, to our knowledge among children this association has not been reported. **Methods:** The data on dental fear and use of cigarettes or snuff were gathered among 15- and 16-year-old adolescents in two nearby cities with similar demographics Pori (N=1659) and Rauma (N=827), Finland in 2005, with a validated questionnaire. Dental fear was measured on a 5- point scale and frequency of using cigarettes or snuff with 7-point Likert-scale questions. Cross- tabulations with chi squared tests and a logistic regression model adjusting for gender were used to evaluate any associations. The Ethics Committee of the Northern Ostrobothnia Hospital District and the City of Pori gave their approval for this study. **Results:** The response rates were 96% in Pori and 91% in Rauma. Of the adolescents, 19.9% (n=494) reported having used cigarettes or snuff 'at least sometimes' and 14.3% (n=383) reported to be 'at least to very or quite afraid' of dentistry (dental fear). Girls reported dental fear more often than boys (19.8% (n=274) vs. 8.7% (n=113), p<0.001) but no gender difference was observed in the use of cigarettes or snuff. Adolescents with dental fear reported using cigarettes or snuff 'at least sometimes' more often than those with low or no dental fear (30.9% (n=105) vs. 17.7% (n=358), p<0.001). The association remained similar after adjusting for the effect of gender (OR=2.1, CI 1.6- 2.7, p<0.001). **Conclusion:** As with adults, adolescents use of nicotine containing products was more common among those with dental fear. Oral health personnel should identify and give special attention to those adolescents with dental fear as they are more likely to have poor health habits than those without dental fear.

### No. 1765 - Parental opinions on children's oral health counselling

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**Aim:** The aim of this study was to describe and compare how parents felt about the oral health counselling of small children; was the information given in accordance with their expectations, were they encouraged to join the counselling conversation and determination of the goals, and did they make changes in oral health habits? **Methods:** Ethical approval was from the ethics committee of Helsinki district. Informed consent was from the parents on behalf of their children when they were recruited to the prevention study. The subjects were the parents with first-born children (born in 2008) who joined the prevention study which started in 2008. The prevention study compares the routine oral health counselling on small children with two new programs that include clinical guidance aimed also to parents, on all the children born in Vantaa in 2008 (n=2715). The transtheoretical model was used as a theoretical framework for counselling. A Webropol-based query (an online system for conducting surveys) with 19 structured questions was e-mailed to the parents (n=507) after the second visit of their children to oral health care at the age of 2. The statistical method was Pearson's Chi-Square. **Results:** The response rate was 64%. Health information was given in accordance with the expectations of 92% of the respondents. Practically all parents (98%) joined the counselling conversation to some extent. Goals were made for 37% of the respondents and 26% of parents took also part in the determination of them. Almost half of the parents (46%) reported that they considered changing the oral habits of their children according to the goals. The parents in the new programs considered making changes to their own oral health care at home in 65% compared to 44% of the parents in the routine program (p=0.004). **Conclusions:** The parents of small children had an active role in the oral health counselling and goal decision of the oral health counselling on their children, and they reported significant changes to their own oral health habits.

### No. 1766 - Common Oral Conditions in HCV infected Iranian Patients: A Cross - Sectional study

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**Aims:** The purpose of this study was to assess the prevalence of oral common conditions in Iranian patients with hepatitis C infection. **Methods:** A cross sectional study was carried out during a period of 12 months from 2009 to 2010. The study group consisted of 73 patients;46 male and 27 female with mean age of 36 years (range 17-68 years), who consecutively attended the Gastrointestinal and Liver Diseases Research Center of the Guilan University of Medical Sciences. The diagnosis of HCV infection was based on the presence of anti-HCV antibodies ascertained by means of a third generation enzyme-linked immunosorbant assay (ELISA) and confirmed by using HCV RNA qualitative PCR. They were examined for common oral condi-

tions by one specialist in oral medicine. Clinical diagnostic criteria as established by the World Health Organisation were applied. Xerostomia was assessed by 4 standard questions adopted from Navazesh (2008). The ethical committee of Gastrointestinal & Liver Diseases Research Center (GLDRC) approved the study protocol and each individual who provided tissue for biopsy signed informed consent. For those who did not provide tissue for biopsy, verbal consent was noted before recruitment to the study. **Results:** Seven patients were edentulous (9.59%). Prevalence of common lesions including Aphthous stomatitis was 2.74% (n=2), Herpes stomatitis was 5.48% (n=4), and for Lichen planus (OLP) was 1.37% (n=1). Three patients complained of Xerostomia (4.1%). **Conclusion:** HCV prevalence in the Iranian general population is lower than in countries in the same area (0.16%). The results of this study are consistent with HCV infection not being a risk factor for OLP. Nevertheless, such an association cannot be excluded using this methodology.

**Methods of funding:** Acknowledgment: This study was supported by the Gastrointestinal and Liver Diseases Research Center.

### No. 1767 - A correlation study between dental caries and body mass index-for-age among adolescents in Rafsanjan, Iran

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Obesity in adolescents is a public health problem and is steadily increasing in many countries. **Aim:** The aim of this study was to investigate the association between age-and gender-specific body mass index (BMI-for-age) and dental caries among adolescents aged 12 -15 years in Rafsanjan, Iran. **Methods:** Following ethical approval, 747 students aged 12-15 years were randomly selected from 12 state and private secondary schools in Rafsanjan, Iran. The DMFT index (following World Health Organization criteria) was used to assess the subjects' previous and existing dental caries experience. The BMI (Body Mass Index) percentile was calculated using BMI-for-age criteria as underweight (<5th percent), normal-weight (5th-85th percent), at risk of being overweight (>85th and <95th percent) and overweight (>95th percent). **Results:** Of 353 males and 394 females examined, 7.5% were underweight, 72.8% were normal-weight, 13.8% were at risk of being overweight, and 5.9% were overweight. The mean DMFT was 2.83. There was no significant difference between DMFT scores amongst the BMI-for-age groups (underweight = 2.91, normal-weight = 2.92, at risk of overweight = 2.54, overweight = 2.34, p=ns). However, males were more likely to have caries than females (11% of males were caries-free, in comparison to 20.6% of females; p<0.05). **Conclusion:** Almost one in five adolescents (19.7% of sample) examined were deemed to be at risk of being overweight, or were classified as overweight. There was no association between DMFT scores and BMI-for-age scores.

**Methods of funding:** This study was supported by a grant of Vice Chancellor of Research of Rafsanjan University of Medical Sciences. There is no conflict of interest in this research.

### No. 1768 - Correlation Between Prevalence of Tobacco Smoking and Emotional Intelligence Amongst Young Adults.

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**Aims:** The aim of the present study was to explore any association between prevalence of tobacco consumption and self-reported emotional intelligence (EI) amongst young adults. **Methods:** A cross sectional study design was used. The study involved a randomly selected sample of 228 students enrolled in one of the private schools of Karachi Pakistan. Ethics approval from the school administration was given and consent forms were signed by the students before starting the study. The respondents remained anonymous and confidentiality was assured. A questionnaire was administered which was a combination of 2 questionnaires; The Global Youth Tobacco Survey (GYTS) and Schutte et al scale of Emotional Intelligence. Three additional questions regarding students gender, age and their grade were part of the GYTS questionnaire. Amongst the four factors on the Schutte's scale one item was identified per factor and selected as part the questionnaire, a fifth aggregate Emotional intelligence score was created to compare the total score correlations with other variables. Chi square test frequencies and cross tabulation of the data were performed. Statistical analysis was carried out using SPSS version 12. **Result:** Amongst the participants more than 41% had smoked at some point in their life and 15% were currently smoking. Analysis of the relationship of total EI score and prevalence of smoking showed no significant difference, while within EI factors; two factors (Social skills and appraisal of other emotions) showed significant difference in relation to prevalence of smoking. **Conclusion:** No. association was found between the prevalence of smoking and the total EI score. The social skills and appraisal of other emotions within the EI factors were positively correlated to the current prevalence of smoking.

### No. 1769 - Association between OHRQoL and atraumatic restorative treatment in schoolchildren – An exploratory study

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**Aims:** To compare Oral Health-Related Quality of Life (OHRQoL) scores between schoolchildren with dental caries relative to caries-free schoolchildren, and to evaluate the subjective impact of Atraumatic Restorative Treatment (ART) on the OHRQoL of schoolchildren presenting with dental caries. **Methods:** The project ( No. 125/2009) was approved by the Research Ethics Committee of the Piracicaba Dental School, University of Campinas. The children's and parents'/guardians' consent was obtained. The research was conducted in a public school in Piracicaba, São Paulo, Brazil. A convenience sample of 15 schoolchildren aged 8-10 years presenting with dental caries and treatment needs was selected for ART treatment (Test Group). Another 15 caries- free schoolchildren with similar characteristics were selected for the control group. The information related to OHRQoL was obtained through the Child Perceptions Questionnaires - CPQ8-10. To evaluate the impact of ART on the schoolchildren OHRQoL, CPQ8-10 was reapplied after four weeks of the dental treatment. For statistical analyses, the nonparametric Wilcoxon test for two dependent variables (test and retest groups) and the nonparametric Mann-Whitney test for independent variables (Test/Retest and caries- free – control) were applied. The results were compared at a level of significance of 5%, using

Bioestat 5.0. **Results:** The group of children with dental caries reported higher impact of their oral conditions on quality of life when compared with the caries-free group, especially in emotional well-being ( $p=0.0362$ ) and social well-being domains ( $p=0.0443$ ). After the schoolchildren presenting with caries were treated by ART, improvements were observed in the median scores of CPQ8-10 in all of the domains, particularly in functional limitation ( $p=0.0415$ ). **Conclusion:** This pilot study showed that dental caries exerted a strong influence on the OHRQoL of 8-10 year old children. In these cases, the use of ART was shown to be a simple and painless alternative to improve oral clinical characteristics and OHRQoL.

#### No. 1770 - Risk factors for dental caries in postpartum women

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**Aim(s):** This study aimed to describe oral conditions in post-partum women and explore the possible risk factors for dental caries. **Methods:** Women were recruited at the Department of Gynecology-University of Milano within three days postpartum. Individuals willing to participate to the study gave written informed consent. The Italian Ministry of University and Research and the Scientific Committee of the Center for Fetal Research "Giorgio Pardi" approved all study procedures. In-person interviews were conducted by four trained dental students to assess socio-demographic information, oral hygiene habits and frequency of dental visits. The intra-examiner reproducibility assessed by Cohen's Kappa coefficient was 0.86. All women received comprehensive dental and periodontal examination. Decayed Missing and Filled Teeth index was recorded for each patient according to the WHO 1997 guidelines. Clinical attachment level (CAL) was calculated as probing depth plus recession. Periodontal disease was defined as having at least three or more sites  $\geq 4$  mm CAL. Logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) to evaluate the possible association between the presence of active dental decays and age, education, smoking status, oral hygiene habits, frequency of dental visits, and periodontal disease. **Results:** A total of 423 women were included in this study. The majority of study participants were European (79.5%,  $N = 325$ ). Women ranged in age from 20 to 44 years, with a median age of 33 years. Participants with less than eight years of education were twice as likely to have one or more dental decay. Patients who brushed their teeth for less than 1 minute/day were around three times more likely to have cavities (OR: 2.6, 95%CI 1.3- 5.1). In addition, women who visited a dentist biannually or only when in pain had a significant increase in the odds of developing decays (OR: 2.2 95%CI 0.9-5.3 and OR: 2.3 95%CI 1.5-3.5, respectively). **Conclusion(s):** Infrequent dental visits and rare dental brushing increase the risk for dental caries. Dentists have a unique opportunity to educate pregnant women about preventing dental caries.

#### No. 1771 - Changes in the microflora of saliva from the oral mucosa of cancer patients

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**Aim:** To compare the influence of chemotherapy for cancer on the microflora of dental plaque and saliva from the oral mucosa of cancer patients. **Methods:** Thirty cancer patients all signed informed consent (both sexes, with grade II breast and prostate cancer). They were divided into a test group receiving chemotherapy and a control group who were not receiving chemotherapy. The quantity of their oral bacteria was monitored, through three samples of dental plaque and saliva from the oral mucosa at t0 (before chemotherapy), t1 (1h after infusion) and t2 (1 week after infusion). **Results:** The mean age of the study group was 39 years of age. In 95% of test patients no statistically significant change in the quantity of bacteria before and after chemotherapy was found (T student test,  $P<0.05$ ). Cross-sectional analysis showed no statistically significant differences between the two groups (T student test,  $P<0.05$ ). In most patients (57%) of the oral microflora consisted mainly of Gram-positive cocci, while the remaining 43% of the bacterial flora of the patients also had periodontal-pathogenic species. WHO grade II oral mucositis was observed in the test group. **Conclusions:** From these small sample of patients no differences were highlighted before and after chemotherapy in bacteria in saliva from oral mucosa of cancer patients.

#### No. 1772 - 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 program 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.

### No. 1773 - 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 Center 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.

### No. 1774 - 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.

**Methods of funding:** The authors wish to thank the local education authority and school heads for supporting the programme and the local health body for providing three year funding.

### No. 1775 - A Literature Review of The Importance of Osteoporosis In Dental Care

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**Aims:** Osteoporosis is one of the life threatening conditions of the elderly. This literature review aimed to give an overview of the importance of the osteoporosis in dentistry. **Methods:** A MEDLINE search of the medical and dental literature was conducted with the objective of reviewing osteoporosis, its effect on public health and the implications in providing dental care for patients with this condition. Studies published between 2005 January and 2010 January were included in the review. The search terms: osteoporosis, public health, treatment, oral health, dental care, bisphosphonates and osteonecrosis of the jaw were used. A filter was to select only reports of clinical trials. **Results:** Of the those reported in the reviewed literature, 31% of all cases of osteonecrosis of the jaws were related to osteoporosis and bisphosphonate therapy. The mean age of the patients ( $n = 130$ ) was just under 70 years. Ninety percent of the osteoporosis cases were women ( $n=120$ ). The mandible was affected more frequently (71%) than the maxilla (29%). Osteonecrosis of the jaws followed a dental procedure or dental lesions in 83% of the reported cases. **Conclusions:** Dentists should be aware of the dangers of bisphosphonate therapy as it is one of the medications used in the treatment of osteoporosis and can cause osteonecrosis of the jaws. Older patients are more likely to have with osteoporosis and this needs to be considered when dental care is provided. Furthermore, dentists need to understand osteoporosis, its treatments and complications.

### No. 1777 - The Relationship Between Dietary Habits and Dental Caries in Schoolchildren

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**Aim:** The aim of this study was to investigate the relationship between dietary habits and dental caries in schoolchildren. Dental caries, is an infectious, transmissible disease caused by multiple factors. In recent years, many studies have determined risk

for patients with caries, and dietary analysis may have a critical importance **Methods:** The study was approved by the Turkish Republic Ministry of Education. 88 schoolchildren (39 female; 49 male) educating in Vedide Baha Pars Primary School, ISTANBUL aged between 11- 12 years were investigated to determine their socio-economic status and oral hygiene habits, DMFT, DMFS, dft, dfs indices and nutritional habits during May 2009. The questions on food consumption frequency were answered by all children and their parents. Pearson coefficients were calculated for correlations between the groups. Non-parametric Kruskal–Wallis analyses of variance (ANOVAs) and post-hoc Mann–Whitney U-tests were used to assess the effects of variables on each other. A minimum sample size for the study was calculated to be 80. **Results:** The DMF, DMFS, dft and dfs scores (and SDs) were;  $2.3\pm 1.9$ ,  $3.33\pm 3.1$ ,  $2.37\pm 2.05$ ,  $4.63\pm 4.36$  respectively. There was no statistically significance between risk groups according to the survey and DMFT, dfs scores; a significant relationship between their parents' answers of the survey and the caries scores was found. **Conclusions:** Parents' answers to a dietary survey for their children and the caries scores were significant. As dental caries is a preventable disease, dietary analysis using parents' answers may be helpful in identifying children at risk of dental caries in routine dental practice.

#### No. 1779 - 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 comprehensive routine caries prevention given in public dental health care. **Methods:** A 4-year, cluster randomized, double-blinded clinical trial in Kotka, a town in southeastern 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.

**Methods of funding:** Acknowledgements. The study has been supported by the Finnish Dental Association. CSM Leaf (Turku, Finland) provided the study with the lozenges. No. conflict of interest exists for any of the authors.

#### No. 1780 - Oral health of preschool children - an integral part of an Austrian "healthy community"

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**Background:** In 2002 the Austrian community of Sarleinsbach with 2200 inhabitants became a "healthy community". Since then many public- health-policy-related activities have been performed to promote general and oral health. One such activity related to early childhood in young children. **Aim:** The aim of this epidemiological study was therefore to assess oral health status and related social factors in preschool children of Sarleinsbach. **Methods:** All 62 children who attended the local kindergarten were involved in the study. Its design was approved by the Ethics Committee of the University of Jena, Germany. Mothers gave consent for participation of their children in the clinical trial including saliva tests. They also answered a validated questionnaire concerning social status and oral health behaviour of both parents and children. Children were examined by a trained and calibrated dentist. Caries status (d3-4mft) using WHO criteria (1997) was recorded. SPSS 15.0 software statistical programme was applied. No. power calculation was performed. **Results:** Incomplete or no data were recorded for 21 children. The data reported are therefore from 41 children (male: 18, female: 23) with a mean age of 4.5 years  $\pm$  1. The majority of their parents had completed compulsory school. More than 70% of mothers (N = 29) /fathers (N = 31) reported that they brush their teeth twice daily. Twenty eight children claimed to brush their teeth after breakfast and 34 before bedtime. Seventy- one percent of the parents (N = 29) supervise children's tooth brushing. Children's main meals and snacks were mostly cariogenic. Twenty three children had a caries free dentition (dmft = 0). The mean dmft of the children was 1.39 (dt = 1.19, ft = 0.2, mt = 0). Eight (19%) of the children had high counts of Mutans streptococci. Lactobacilli counts were low. **Conclusions:** It was concluded that the oral health of these preschool children should be improved by lower consumption of cariogenic foods and adequate tooth brushing.

**Methods of funding:** The clinical study was supported by SCANDERRA AG Oral Health Products, Switzerland and PHARMADOR DENTAL GesmbH, Austria

#### No. 1781 - A system of financial classification of oral health care

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**Aims:** The aim of this study was to develop a patient classification model which relates oral health status to episodes of treatment. **Methods:** The data were collected from a sample of 195,036 records of patients treated in the Public Dental Services

(PDS) of the three cities of Helsinki, Espoo and Vantaa. The records of all patients (130,790) who had received a minimum of two examinations during years 2004-2007 were then included and analysed. Duration of treatment procedures was measured among all dentists in Helsinki and Vantaa, together with the average time taken for each procedure. The DMF -, d+D - and CPI max (highest patient score) indices and the patient's age were collected from their first examination, together with all treatment performed between the two examinations. In this model the dependent variable was the total time taken over treatment procedures. The explanatory variables were the continuous variables d+D, CPI max, DMF indices and age. The data were randomized to two subgroups: 80% for training and 20% for testing. The main statistical grouping method applied to the training material was the FASTCLUS procedure. Costs per minute were calculated from the Helsinki Health Centre Oral Health Care 2008 budget and for each patient group the average costs were determined. To assure all required treatment had been provided, two conditions were applied to the data. They were: if the d+D value was above 0, the treatment episode needed to include filling or extracting procedures: and if the CPI max value was above 1, the treatment episode needed to include periodontal treatment or extraction of teeth. (Patients with total treatment time over 700 minutes were excluded as outliers.) If these conditions were not met, the patient's data was excluded from the analysis. Ethical approval for the study was given by the Public Health Services in each city. Evaluation was carried out by applying an eleven patient group model to the resulting data. **Results:** The resulting classification the ODRG (Oral Diagnosis-Related Group) includes eleven categories which are: Children and adolescents (0- 17 years), basic care; Children and adolescents (0-17 years), advanced care; Young adults (18-36 years), basic care; Young adults (18-36 years), advanced care; Adults (37-62 years), basic care; Adults (37-62 years), medium care; Adults (37-62 years), advanced care; Retired (63-73 years), basic care; Retired (63-73 years), advanced care; Seniors (74 years plus), basic care; Seniors (74 years plus), advanced care. This model may be used as a patient classification model both retrospectively and prospectively. **Conclusions:** This model provides the managers of the PDS with reliable data on the target population's oral health care. It supports the efficient use of resources by providing the basis for cost- effectiveness analysis and helps to identify which population groups have received most care and treatment. Comparison between different PDS clinics provides the basis for a productivity analysis nationwide.

**Methods of funding:** As a part of the Health Care Productization Project this subproject has received funding from the National Health Care Project from 2006 to 2008. From then on it has operated as a part of the Helsinki Health Centre Oral Health Care operations.

#### No. 1782 - Psychological distress and dental fear among adults in Finland

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**Aim:** The aim of the present study was to evaluate the association between dental fear and psychological distress using a representative sample drawn from the general adult population. **Methods:** This cross-sectional study was part of the comprehensive nationwide Health 2000 Survey. Permission for the study was given by the ethics committees of the University Hospital Region of Helsinki and Surroundings. The sample represented the Finnish population of 30 years and older. Psychological distress was measured using the 12 item version of General Health Questionnaire (GHQ). It was a self reported instrument which included questions on current symptoms of depression, anxiety, sleep disturbance, and social functioning. The responses were dichotomised by the 0-0-1-1 method. Sum score >3 was threshold of psychological distress. Dental fear was investigated by a single question: "How afraid are you of visiting a dentist?". The response alternatives were "Not at all", "Somewhat", and "Very". The study included the participants who filled out the GHQ and answered the question about dental fear. The final sample consisted of 5,268 participants. In the whole sample and among men and women the statistical significances of the differences between the groups of dental fear were assessed with chi square tests. **Results:** The prevalence of high dental fear among participants with psychological distress was 122 (12.9%) and 394 (9.1%) ( $p < 0.001$ ) among other participants of the study; the corresponding prevalence was among men 40 (10.0%) and 121 (5.8%) ( $p = 0.007$ ), and among women 82 (15.1%) and 273 (12.1%) ( $p = 0.031$ ), respectively. **Conclusion:** Those with psychological distress were more likely to have high dental fear than other participants. The association between psychological distress and dental fear indicates that there might be something in the psychological construct of these people making them vulnerable to psychological problems and dental fear.

**Methods of funding:** The Finnish Dental Society Apollonia supported this study.

#### No. 1783 - Dental caries experience in 7-12-year-old school children in Ankara, Turkey

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**Introduction:** Dental diseases are both an individual and a community health problem. The prevalence of dental caries have been reduced over the last decades in developed countries. However, it is still increasing in developing countries. **Aim:** The aim of this study was to determine the caries prevalence of the population in 7-12-year-old elementary school children in Ankara. **Methods:** The study was a part of a school-based fluoride program. Ethical approval was obtained from the Ankara University Ethics Committee. The study was carried out in 2010 on 367, 7-12-year-old school children, who were randomly selected in urban area of Ankara. Parents' written consent was obtained at the beginning of the study. The examinations for caries were conducted by a single dentist using World Health Organization 1997 criteria. Caries experience (DMFT, dmft), caries prevalence and oral hygiene status (Silness-Löe 1964 plaque index) were calculated. **Results:** Results showed that the mean dmf-s and DMF-S scores were 7.78 and 2.12, respectively. Overall caries prevalence was 94.4%, the mean plaque index (PI) was 1.25 and 5.6% of the children were caries-free. **Conclusions:** The mean dmf-s/DMF- S scores, the prevalence of caries, the plaque index and treatment needs of these children in Ankara is high. This results showed that health education programs and suitable treatment should be emphasized to school aged children.

### No.1785 - Systemic fluoride intake in preschool children

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**Aims:** This study of total systemic fluoride intake in preschool children was conducted to obtain appropriate data on local nutrition practices important for dental practitioners when indicating fluoride supplementation at both individual and community levels. The approval of Ethical committees of both Medical Faculties and the informed consent of families invited into the study were obtained. **Methods:** Circadian systemic fluoride intake was measured in a group of 36 children with average age of 4.75 years. The average weight was 20.69 kg, at the start of the study. Intake was measured by a double plate method at two stages with a 6 months interval. None of the children has taken fluoride supplements (tablets) during the study or before. Parents recorded a 24h diet and collected duplicated portions of food and beverages received by children during the relevant period. Pooled samples of food and beverages were weighed and solid food samples were homogenized. Fluoride was quantitatively extracted from solid food samples by a microdiffusion method using hexadecyldisiloxane and perchloric acid. The content of fluoride extracted from solid food samples as well as fluoride in beverages was measured potentiometrically by means of a fluoride ion selective electrode. **Results:** Average circadian fluoride intake in the first stage was 0.458 (0.224 to 1.024) mg per day, in the second stage 0.378 (0.139 to 0.563) mg per day, which is 0.023 (0.011 to 0.051), or 0.018 (0.006 to 0.026) mg of fluoride calculated per 1 kg of child's weight per day. **Conclusions:** Observed circadian fluoride intake reached the bottom threshold border for safe fluoride intake (0.05-0.07 mg/kg b.w./day). When adding the potential fluoride intake from swallowed toothpaste, systemic intake reached the optimum range of fluoride intake. The results suggest caution when recommending fluoride supplements and their dosage regimen.

**Methods of funding:** Supported by the grant of the Ministry of Health, Czech Rep., reg. no. NS/10353-3.

### No. 1786 - Oral health intervention among community-dwelling elderly - A two-year follow study

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**Aim:** To investigate the effects of a two- year oral- health promoting intervention on periodontal health and oral health behavior among dentate people aged 75 years or older. **Methods:** Written informed consent was obtained from the study participants or their relatives. The study was approved by the Research Ethics Committee of the Hospital District of Northern Savo. Randomly selected community-dwelling participants were recruited to the study, 145 in the intervention group (dentate n=68), and 134 in the control group (dentate n=80). Interviews and clinical oral examinations were performed on the intervention group annually and on the control group at baseline and at two- year follow-up. Changes in oral health and oral health behavior were used as outcomes. Oral health intervention included individually tailored instructions for oral and/or denture hygiene, relief of dry mouth symptoms, use of fluoride, xylitol, and/or antimicrobial products, and professional cleaning. **Results:** A total of 279 from 500 took part. 119 participants refused, 65 died, 33 moved to institutionalised care before the intervention started, and 4 moved outside the city of Kuopio. At baseline 80% and at first follow-up 88% of the dentate study participants were involved in the intervention. After intervention, at two year follow-up, it was found that in the intervention group the proportion of participants with good oral hygiene had increased from 22% to 41% (in the control group 43% vs. 50%), without gingivitis from 24% to 60%, (in the control group 33% vs. 51%), without calculus from 17% to 32% (in the control group 30% vs. 37%) and without deepened periodontal pockets from 38% to 58% (in control group 41% vs. 60%). Further in the intervention group the proportion of the participants who brushed their teeth < 2 times a day had increased from 64% to 73% (in the control group it stayed at 76%), used toothpaste 2 times a day from 44% to 50% (in control group 53% vs. 57%), used daily toothpicks from 41% to 47% (in the control group 40% to. 43%) and used interdental floss or brush from 26% to 32% (in the control group 15% to. 20%). However, no differences between the groups were statistically significant. **Conclusion:** Among the community- dwelling elderly oral health can be improved by oral health intervention. Even moderate changes in oral hygiene practices increased clinical periodontal health significantly.

**Methods of funding:** This study was financially supported by Social Insurance Institute of Finland and the City of Kuopio.

### No. 1788 - Implementation of an oral healthcare protocol: effect on geriatric nurses' knowledge and attitude

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**Aim:** To explore the impact of a supervised implementation of an oral healthcare protocol on knowledge and attitude of geriatric nurses and nurse aides towards oral healthcare. **Methods:** The study sample consisted of nurses and nurse aides (N= 760) from 13 nursing homes (in Flanders, Belgium) participating after ethical approval and their consent in a cluster RCT exploring the effectiveness of a supervised implementation of the Dutch Oral Health Care Guideline for Older People in Long Term Care Institutions and derived oral healthcare protocols. Seven institutions were randomly allocated to the intervention (I) and 6 to the control group (C). A validated questionnaire assessed knowledge, attitude and additional explanatory variables of nurses and nurse aides (N=259, response 34%) at study start and 6 months after implementation. Bivariate analyses explored differences between nurses or nurse aides belonging in the intervention (n=165) or control (n=94) group. Linear mixed model analyses with random nursing home effect were performed to explore differences in knowledge and attitude at 6 months after implementation owing to the intervention and the predictive value of other relevant explanatory variables. **Results:** Six months after implementation, attitude slightly improved in both study groups, but only significant in the control group 50.7 to 51.9 (p=0.03). Knowledge significantly improved in both study groups (i. 65.5 to 83.3) p<0.000 and C:( 63.4 to 68.3) p=0.001 with the intervention group significantly showing the largest increase. The mixed model revealed a significant difference in attitude relating to education levels (p=0,009), wards (p=0,01) and age groups (p=0,03). Concerning knowledge the mixed model indicated the posi-

tively significant effect of the intervention ( $p=0,001$ ) and the education level ( $p=0,01$ ). **Conclusion:** Taking into account the low response rate, the supervised implementation process only significantly improved knowledge of nurses and nurse aides with the most favorable attitude. Attitude was influenced by education level, ward and age with the most favorable attitude found among nurse or nurse'aides in psycho-geriatric wards and those in the oldest age group.

### No. 1789 - The development and evaluation of an oral healthcare model for institutionalized older people

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**Aim:** To develop and evaluate an oral healthcare model for older people in nursing homes emphasizing the integration of oral healthcare into regular daily healthcare. **Methods:** After obtaining ethical approval and informed consent, an evidence based oral hygiene protocol (OHP) was developed, implemented (non- supervised) and evaluated during a 5- year longitudinal RCT in 13 randomly selected nursing homes (Belgium - East- Flanders). Seven nursing homes were randomly allocated to the intervention and 6 to the control group. Then, a second group randomized trial was set up in 12 nursing homes in Belgium - West-Flanders, randomly divided in 6 intervention and 6 control nursing homes. Within a 6 month study period an adapted OHP, taking into account the results of previous research, was implemented (supervised). The outcome variables for the effect evaluation were residents dental (Sillnes&Løe 1964) and denture (Augsburger) plaque levels. Additional individual variables were gathered by questionnaires. The evaluation of the implementation process was qualitatively performed by focus groups and face to face interviews. Depending on the sample size, parametric or non-parametric bivariate analyses were performed to explore differences between baseline and post-intervention. GLM were employed to estimate differences in oral hygiene levels between the groups. **Results:** Dental (mean 1.68) and denture (mean 2.05) plaque levels remained unsatisfactory after 5 years of non-supervised care. After 6 months supervised care only denture (mean plaque index 2,15 to 1.1.99) hygiene significantly ( $p < 0.01$ ) improved. Multilevel analyses, taking into account random nursing home effect showed clearly that the intervention and all individual factors, influencing the implementation outcomes, were overruled by the nursing home. The qualitative data analysis showed that the OHP itself was well accepted by nurses but revealed several barriers to the integration of oral health care into regular daily healthcare. **Conclusion:** In order to implement an OHP, oral health attitudes and perceptions of nurses have to be assessed and should guide further implementation strategies. The implementation process has to be supervised, actively guided and continuously monitored by an oral healthcare professional. Internal evaluations of residents' oral health and oral health practices have to be performed periodically.

**Methods of funding:** Acknowledgments: Data collection support by GABA INTERNATIONAL.

### No. 1790 - Dental Public Health principles in Oral Health Care Systems - A Review

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**Aim:** the aim of this literature review was to identify documents on the policies and decisions at a legislative level that have the potential to strengthen public and preventive dental health care. **Methods:** Published dental public health policy documents were reviewed after they had been accessed from the following databases: Medline (Pubmed), Ovid, MD Consult and Google Scholar. The following search terms were used: oral health, dental health, oral health and prevention policy, dental health and prevention policy, oral health documents. The resulting papers were then classified according to the WHO framework of health system functions. international case-studies on the review topic were also reviewed. A final consensus about the documents was reached in roundtable discussions with experts in the field of health and oral health policy. **Results:** The review indicated that there are many policy tools that are effective in strengthening preventive approaches. Regulations on mouth guards in contact sports, regulations for the establishment of smoke-free public areas, water fluoridation, designing finance and payment methods in capitation payment systems, improving financing and increasing provider reimbursements in insurance programs for preventive services to attract dentists, government funding of portable mobile dental care services for the disadvantaged public, employing dental hygienists and other dental auxiliaries in dental teams are all important tools that can contribute toward a more effective oral health-care system. **Conclusion:** There are a number of different policy tools that can aid policy development for prevention and public health at national, local and institutional levels.

### No. 1791 - Salivary cotinine, smoking and periodontal status in 35-44 year-olds from Constanta, Romania

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**Aim:** to evaluate the salivary cotinine levels, the smoking and periodontal status of 35-44 year-olds from Constanta. **Methods:** a cross-sectional study was made on 286 subjects (stratified multistage sampling design; 6% sampling error, 95% C.L.). Unstimulated salivary cotinine levels were measured using NicAlert<sup>®</sup> Saliva. Self-reported smoking status was evaluated on a questionnaire basis. The subjects' periodontal status was assessed by clinical examination (using a WHO 621 probe) and measurement of probing pocket depth (PPD) and loss of attachment (LA), according to WHO 1997 criteria. Data were entered into SPSS 12. Ethical permission and written consent from the subjects were obtained. **Results:** The cotinine levels were: 0 for 47 subjects (16.4%), 1 for 103 subjects (36.0%), 2 for 19 subjects (6.6%), 3 for 26 subjects (9.1%), 4 for 28 subjects (9.8%), 5 for 42 subjects (14.7%), 6 for 21 subjects (7.3%). The questionnaire's analysis showed that there were 160 non-smokers (55.9%) and 126 smokers (44.1%). The mean number of sextants ( $\pm$ S.D.) with different values of maximum PPD in nonsmokers versus smokers was: PPD<sub>1-3mm</sub> - 4.18( $\pm$ 2.25)/3.49( $\pm$ 2.28); PPD=4-5mm - 1.02( $\pm$ 1.67)/1.27( $\pm$ 1.63); PPD<sub>1-6mm</sub> - 0.28( $\pm$ 0.91)/0.57( $\pm$ 1.27). Smokers showed a lower number of sextants with maximum PPD<sub>1-3mm</sub> and a higher number of sextants with maximum PPD<sub>1-6mm</sub> than nonsmokers (ANOVA;  $p < 0.05$ ). The mean number of sextants ( $\pm$ S.D.) in each LA



score in nonsmokers versus smokers was: LA=0 - 3.69( $\pm$ 2.39)/2.67( $\pm$ 2.39); LA=1 - 1.43( $\pm$ 1.65)/1.78( $\pm$ 1.66); LA=2 - 0.41( $\pm$ 0.89)/0.65( $\pm$ 1.18); LA=3 - 0.01( $\pm$ 0.11)/0.16( $\pm$ 0.52); LA=4 - 0.00( $\pm$ 0.00)/0.08( $\pm$ 0.48). Smokers showed a lower number of sextants with LA=0 than nonsmokers and a higher number of sextants with LA=3 and 4 than nonsmokers (ANOVA;  $p < 0.05$ ). The salivary cotinine was positively correlated with the number of sextants with maximum PPD > 3mm and also with the mean number of sextants with LA  $\geq$  1 (Spearman coefficient;  $p < 0.05$ ). **Conclusions:** the results of this study indicated that smokers had evidence of more severe periodontal disease than nonsmokers; the salivary cotinine levels measured by NicAlert<sup>®</sup> were correlated with the severity of periodontal disease measured by maximum PPD and LA.

**Methods of funding:** This work was funded by CNCIS&#8211;UEFISCSU, project PNII&#8211;IDEAS 1216/2008.

### No. 1792 - Community Periodontal Index Assessment of 35 - 44 year-olds from Constanta, Romania

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The Community Periodontal Index (CPI) has been widely used to estimate the periodontal treatment needs of populations. **Aim:** The aim of this study was to estimate the periodontal treatment needs of the population of 35 - 44 year-olds (both urban and rural) who lived in the Constanta District. **Methods:** A sample of 286 adults aged 35 - 44 years was drawn (0.06 sampling error; 95% C.L.). A stratified multistage sampling design was applied, based on three variables: rural or urban domicile, localities and family medicine clinic attended. (random proportional selection was applied). The final sample was drawn by systematic sampling from the lists of patients registered with the family medicine clinics. The CPI Index was used together with World Health Organization 1997 criteria. The examination was performed by calibrated examiners, in the family clinics. The resulting data were recorded on individual charts. Ethics approval and written consent were obtained. Data were entered into SPSS 12 and statistically tested using ANOVA. **Results:** The mean number of sextants in each CPI category was 1.60 $\pm$ 2.05 for CPI score 0, 0.55 $\pm$ 0.95 for CPI score 1, 1.73 $\pm$ 1.65 for CPI score 2, 1.13 $\pm$ 1.65 for CPI score 3 and 0.41 $\pm$ 1.09 for CPI score 4. The mean number of sextants requiring professional periodontal treatment (CPI score 2, 3 and 4) was 3.27 $\pm$ 2.06, significantly higher in men (4.22 $\pm$ 1.81) than in women (2.68 $\pm$ 1.98) ( $p < 0.05$ ). There were no statistically significant differences in the CPI scores of urban and rural dwellers. **Conclusion:** The results of this study demonstrated a population need for periodontal care in adults from the Constanta District. There is also a need for community oral health education programs in order to improve the population's knowledge and attitudes towards their periodontal health.

**Methods of funding:** This work was funded by CNCIS-UEFISCSU, project PNII-IDEAS 1216/2008.

### No. 1793 - Diagnostic Agreement in the Assessment of Orthodontic Needs and Oral Impacts on Daily Performance

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**Aim:** to estimate the diagnostic agreement between dental aesthetic index (DAI), index of orthodontic treatment need (IOTN-DHC and AC) and index of complexity outcome and need (ICON) assessments of orthodontic treatment needs and test the association between the normative needs and the presence of impacts on daily performances attributed to malocclusion. **Methods:** After obtaining ethics approval a random sample which included included 528 subjects (243 male and 285 female) aged 15-years was drawn from schools in the Piracicaba area of San Paulo, Brazil. Adolescents who had undergone or were undergoing orthodontic treatment were excluded. After obtaining parental consent, the adolescents underwent an introral examination during which malocclusions and the DAI and IOTN were recorded by two calibrated examiners. Face-to-face interviews were employed to ascertain the subjects views on the oral impact on daily performance and the (CS-OIDP) instrument was used to assess this impact. The DAI, IOTN and ICON were dichotomized into 'yes' or 'no' categories of treatment need and agreement was calculated using Kappa replication statistics. The comparison of proportion of treatment need and the association with presence of impacts was tested using the Chi-square test. **Results:** The orthodontic treatment needs according to the criteria adopted were: 20.65% (n=109) DAI; 19.79% (n=104) IOTN (DHC); 4.73% (n=25) IOTN (AC) and 21.78% (115%) ICON. Agreement of the indexes was weak (Kappa ranging 0.018-0.235). Only the comparison IOTN (DHC)-ICON presented a good relationship (Kappa 0.499). Normative needs showed significant relation to oral impacts on daily performances attributed to malocclusion. **Conclusion:** The determination of orthodontic treatment needs in public health should consider clinical normative and oral health-related quality of life measures.

**Methods of funding:** CAPES, Brazil.

### No. 1794 - Risk Indicators of Impacts on Daily Performances Attributed to Malocclusion among Brazilian Adolescents

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**Aim:** The aim of this study was to test the association between the presence of impact on daily performance due to malocclusion and bio- psychosocial variables and to evaluate the risk indicators of impacts attributed to malocclusion. **Methods:** The protocol was approved by the Ethics Committee in Research of the School of Dentistry of Piracicaba (UNICAMP) and an informed consent form was obtained prior to the survey. A random sample which included 528 subjects, aged 15- years was drawn to give a standard error  $\leq$  5% at a 95% CI level. A 29% prevalence of oral impacts on daily performances due to malocclusion was used for the calculation of the minimum sample size. The dental aesthetic index (DAI) was used for clinical assessment. The condition specific feature of oral impact on daily performances (CS- OI DP) instrument was used to assess the presence of impact. The subjects were evaluated for their self-esteem (global self-evaluation) and self-perception of oral esthetics (oral aesthetic subjective impact scale). Orthodontic concern and socioeconomic variables were also assessed through questionnaires. Multiple logistic regression was used in the data analysis. **Results:** Logistic regression indicated that mandatory nor-

mative need<sub>j</sub><sup>-</sup> (OR=1.98; CI= 1.01-2.95; p=0.04), anterior crowding in one or more segments (OR=2.05; CI=1.29-3.2; p<0.001), maxillary anterior crowding  $\geq 2$  mm (OR=2.48; CI= 1.58-3.88; p<0.001), low self esteem (OR=1.51; CI=1.01-2.27; p=0.04), negative esthetic self perception (OR=2.30; CI=1.51-3.49; p<0.001), and  $\text{no orthodontic concern}_j^-$  (OR=0.52; CI=0.34-0.80; p<0.001) were risk indicators to oral impacts. **Conclusion:** One third of the 15-year olds sampled reported negative impacts on daily performances attributable to malocclusion. Thus, there was a statistical relationship between orthodontic treatment need in public health and the presence of impacts on daily activities specifically attributed to malocclusion.

**Methods of funding:** CAPES, Brazil.

### No. 1795 - Fluoride intake from fluoride dentifrices by children and adults

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**Aim:** The aim of this study was to evaluate the fluoride intake from dentifrices by children aged 1-3 years, 4-6 years and by adults. **Methods:** Three groups were investigated: 34 children aged 1-3 years whose parents took them to the clinic for dental examination, 23 children aged 4-6 years whose toothbrushing was supervised in a kindergarten and 24 university students. The dentifrice for the children contained 500 ppmF and for adults – 1,450 ppmF. In case of the group of 1-3 year old children, the dentifrice was dispensed on toothbrushes by their caregivers. Children aged 4-6 years and adults dispensed the dentifrice on their toothbrushes unassisted. The amount of F ingested was indirectly obtained, subtracting the amount expelled and the amount left on a toothbrush from the amount initially dispensed on those toothbrushes. The parents gave written consent for the children to take part in the study. The results were analyzed using ANOVA and regression analysis. **Results:** The caregivers dispensed 0.23±0.03 g of dentifrice on toothbrushes. The amount of dentifrice used by 4-6 year old children was significantly higher and averaged to 0.63±0.05 g (p<0.05). The adults dispensed 0.62±0.12 g of dentifrice on toothbrushes. The amount of fluoride ingested during toothbrushing was 0.08±0.01 mgF in the group of children aged 1-3 years, 0.12±0.01 mgF in the group of children aged 4-6 years and 0.33±0.13 mgF in the group of adults. 1-3 year old children aged ingested 60.7% of dentifrice, children of 4-6 years – 40%, adults – 34.1%. There was a strong positive correlation (r = 0.68, 0.75 and 0.81 accordingly, p<0.05) between the amount of dentifrice used and the amount of fluoride ingested during toothbrushing. **Conclusions:** The results indicate that the younger children had a tendency to ingest dentifrice while older children tended to dispense a higher amount of dentifrice on the brush. Parents should use a small amount of dentifrice and supervise toothbrushing of preschool children.

### No. 1797 - How primary care dentists perceive their work in the Catalan NHS?

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**Aims:** To evaluate services provided by the dental public system and to critically assess the barriers to deliver better services. **Methods:** Between October and December 2009, data were obtained through an on-line survey sent to all dentists (n=340) working in the Catalan NHS. A survey with some common questions had previously been performed in 2001. **Results:** All dentists who responded (n=72; women 55%) confirmed that demand for NHS services had increased in the last two years. They considered that the main reasons for the increase were: an increased number of immigrants, reported by 55 respondents (76%), and the economic crisis reported by 50 (69%), which had led to a decreased demand for private restorative dentistry (not covered for adult population) and an increase in oral surgery (fully covered by the NHS). Between 2001 and 2009, the percentage of dentists supported full-time by a clinical assistant (dental nurse) fell from 66% to 51%. The increase in demand plus the decrease in the support from clinical assistants has resulted in an increase in the percentage of patients waiting more than one week to get an appointment from 23% in 2001, reported by 33 dentists, to 62% in 2009, reported by 45 dentists. Fifty nine (82%) of the responding dentists believed that the software for their new clinical chart was not appropriate. Thirty six (50%) believed the management of their supplies was inefficient. There was a reported increase in the percentage of dentists carrying out preventive activities for children such as fissure sealants (53%; in 2001 to 78%; in 2009) and fluoride gel application (84% in 2001) to (99% in 2009). Even though restorative treatment for children has recently been provided in the NHS (2008) and was reported as being provided by only 14 (20%) of the dentists who responded, 44 (61%) of the respondents suggested that private provision of child services would promote better access for patients than in the NHS. **Conclusions:** The rather low response rate, of just under 25%, may have biased the results obtained. However, it appears that the recent changes that have taken place have led many NHS dentists in Catalonia to conclude that the NHS may not currently be the best provider for oral health care for children.

**Methods of funding:** Catalan Dental Union (COEC).

### No. 1798 - A prospective study on caries incidence in a cohort of Flemish preschool 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 dentinal caries experience was observed in 139 (22%) and 213 (41%) of the cohort respectively. Bet-

ween 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.

**Methods of funding:** Study supported by GABA International.

### No. 1799 - Caries prevention program based on individual needs among children in Moscow: 3 year results

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Caries prevalence in Moscow among children is moderate but has a tendency to increase with age. A caries prevention program based on individual needs is a relevant strategy in this region. **Aim:** To assess a caries prevention program among children based on their individual needs. **Methods:** Forty Moscow children aged 6-7 years old were selected to be included in the study. The prevention program was organized in one of the Moscow dental clinics and was based on: (1) education of the children in caries prevention, (2) professional tooth cleaning at individually planned recall intervals, (3) topical fluoride and sealant application. Children were examined at baseline and after 3 years for caries. Occurrence of plaque was recorded on the occlusal, buccal and lingual surfaces of teeth 46(85), 22 (62) and on 26 (65) respectively, according to the following classification: 0- no visible plaque, 1- slight evidence of plaque (thin plaque), 2- easy detectable plaque (thick plaque) (modified from Carvalho et.al.(1989). The gingival status was scored on facial surfaces of teeth 16(55), 12(52), 32(72), 36(75) as 0-sound, 1- bleeding after probing (moderate inflammation), 2- bleeding after air blowing (severe inflammation) (modification of Løe, 1967). The frequency of recall visits was also recorded. All parents gave written consent for their children to take part in the study, which was approved by the Ethics Committee of the Ministry of Health. **Results:** At baseline examination mean dmft level was  $5.35 \pm 0.55$ . The total number of visits during 3 years was 338. Mean number of recall appointments was  $8.89 \pm 0.20$  per patient. The mean recall interval was  $3.68 \pm 0.05$  months. The mean plaque index decreased from  $1.32 \pm 0.09$  to  $1.24 \pm 0.08$  ( $p > 0.05$ ). Most of the patients had evidence of "thin plaque" (64%). After 3 years, the mean Gingival Index increased from  $0.29 \pm 0.08$  to  $0.32 \pm 0.09$  ( $p > 0.05$ ). The mean DMFT increased very slightly from 0 at baseline to  $0.20 \pm 0.09$  at the end of the 3 year of program. **Conclusion:** The prevention program based on individual need was effective in controlling caries development in permanent dentition of the children who took part in the study.

### No. 1800 - Caries experience and parental attitudes to oral health in pre-school children

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**Aims:** The purpose of the study was to gain basic knowledge on the factors influencing primary prevention and caries experience in pre-school children. **Methods:** Examination of dental status was performed in a cohort of 3 to 5 year old children, randomly selected in nursery schools in the cities of Prague (P) and Hradec Králové (HK). The inclusion criteria were informed consent of parents and no systemic disease of the child. Children were examined by two examiners. Standard methodology recommended by WHO (1997) was used and following parameters were calculated: % caries free, dt, dmft, RI, SCI and presence of dental plaque on upper incisors. The results were compared (HK vs.P, HK+P vs. nationwide data (2001) by a Student's t test,  $p = 0.05$  Ethics approval for the study was given by the University Hospital of Charles University. **Results:** The total number of examined children was 144. 98 (55 boys/43 girls) in P and 46 (21 boys/25 girls) in HK. The average age of the children was 3.77 years ( $SD \pm 0.29$ ). The mean dt in both cohorts was 1.44 (1.58 in boys and 1.39 in girls). There was no statistical difference in dt between P and HK. The mean dmft was 1.75 (dt 81.2%). The dmft was statistically lower in HK (1.48) compared to P (2.05). Restorative index (RI) was 17.3 (no statistical differences between HK and P). Significant caries index (SCI) for both cohorts was 5.96 (significant difference between HK 5.33 and P 6.58). A detectable amount of plaque on upper incisors was found in 83 children (61.9%). No differences between both cohorts. Our findings have been compared with the data of nationwide survey of age-matched children conducted in 2001 and no statistical differences have been found. **Conclusion:** Results of the onset examination to the longitudinal study showed urgent need of the effective primary preventive intervention based on the next findings of the longitudinal study to come.

**Methods of funding:** Supported by grant of the Internal Grant Agency of the Min. of Health, Czech Republic No. NS/10353-3.

### No. 1802 - Alterations in determinants of parental oral health behaviour associated with education level

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**Aims:** This study aimed to investigate longitudinal changes in parental determinants of oral health behaviour based on the Theory of Planned Behaviour and to evaluate the impact of maternal educational level. **Methods:** The cohort consisted of 1,057 children, or 64% of all children born between October 2003 and July 2004 in two distinct regions in Flanders (Belgium). All participants attended the well-baby clinics, were Dutch-speaking and signed an informed consent. Validated questionnaires, completed at birth, age three and five, assessed attitudes, social norms, perceived behavioural control and intention towards three behaviours: dietary habits, oral hygiene habits and dental attendance. Linear mixed model analyses with repeated measures were applied. The study protocol received ethical approval from the Medical Ethics Committee at the Katholieke Universiteit Leu-

ven, Belgium. **Results:** Analyses were performed on the data of 949 participants (90%). Maternal education level and age had a significant effect on the three oral health related behaviours. Positive parental attitudes towards oral health related behaviours increased between birth and age three ( $p < 0.001$ ), whereas the scores for subjective norms and intentions decreased ( $p < 0.001$ ). Scores remained stable in the following years. Mothers educated to a high level scored significantly higher for attitudes, perceived behavioural control and intentions compared with mothers educated to a low level ( $p < 0.05$ ). **Conclusion:** Parental determinants of oral health behaviour, change over time and differ according to maternal education level. Health promotion campaigns aiming to change parental oral health behaviours should take these natural and differential alterations in dental beliefs into account when developing and evaluating interventions.

**Methods of funding:** Study supported by GABA International.

### No. 1803 - Bayesian analysis of zero-inflated regression model with application to dental caries

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**Aims:** DMFT (Decayed, Missing, Filled, Teeth) is an important indicator of oral health status. To obtain unbiased estimates of the regression coefficients in the presence of an excess of DMFT=0, we adopted a Bayesian approach to estimate the zero DMFT index. **Methods:** We developed a Bayesian model using Oral Health data from the Italian Pathfinder survey. This secondary analysis did not require ethical approval. A sample of 4,407 twelve-year-old children was used. Zero-inflated Poisson (ZIP) and Negative-Binomial (ZINB) Bayesian Regression Models were fitted to the DMFT index as dependent variable and gender, parents' education, breastfeeding, sweet intake and fluoride intake as explanatory variables. Two models were considered, one making use of explanatory variables to predict the mixture proportion, the other assuming constant inflation. Finally, Poisson, NB, ZIP and ZINB models were also fitted to the data to compare their performance with the Bayesian one. **Results:** All models revealed significant association between caries experience and risk factors only for gender, parents' educational levels, sweet intake, sweet beverage drinking and fluoride intake. Poisson and NB regressions showed a poor fit with respect to zero-inflated models. The best-fit model was the Bayesian ZIP model with constant inflation, whose estimated coefficients with their equal-tail 95% credible interval estimates were respectively 0.224[0.149; 0.294] for gender, -0.412[-0.489; -0.338] for mother's education, -0.253[-0.334; -0.17] for father's education, 0.128 [0.054; 0.199] for sweet intake, for sweet beverage 0.380 [0.211; 0.545] and -0.183[-0.255; -0.113] for fluoride intake. The posterior mean estimate of DMFT=0 was 0.57[0.129; 1.000], close to the empirical percentage of zero-DMFT, which is 0.57. **Conclusion:** Zero-inflated models have been shown to be useful for DMFT index especially when there is an excess of zeros. Bayesian and frequentist estimates of the parameters performed well and the difference between the two approaches was almost negligible. However, the Bayesian proposed method performed better in estimating the Probability (DMFT=0).

### No. 1804 - Clinical evaluation of dental restorations during preventive agents applications

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**Aim:** To evaluate the influence of preventive agents on light-cure composite restorations in the oral cavity. **Methods:** The study was approved by the Ethics Committee of Moscow State University of Medicine and Dentistry. All the participants signed informed consent. «Ceram X mono» restorations were placed in premolars and molars of 70 patients randomly divided into 2 groups. In the test group (33 patients, 110 restorations) preventive care including oral hygiene agents (toothpaste, toothbrush, mouth rinse and dental floss) and professional oral hygiene was provided, while in the control group (37 patients, 80 restorations) special prevention wasn't given. The restorations were clinically evaluated according to Ryge-criteria 12 months after placement. **Results:** After 12 months, a slight crevice along the marginal interface was scored as Bravo in 4.5% (N=5) and 12.5% (N=10) of restorations in the test and control groups respectively. A slight roughness (Bravo score) was found in 9.0% (N=10) restorations in the test group, while in the control group 18.7% (N=15) were scored as Bravo and 3.7% (N=3) as Charlie; severe rough surface. 99% (N=109) of the restorations had good occlusal anatomy in the test group and only 1.0% (N=1) was undercontoured (Bravo score). In the control group 9.0% (N=7) demonstrated Bravo, 2.5% (N=2) - Charlie score which indicated missing restorative material and exposed dentine. Cavosurface marginal discoloration was scored on the occlusal surface of 5.4% (N=6) and 16.2% (N=13) restorations in the test and control groups respectively. During 12 months caries developed in 2.5% (N=2) restorations only in the control group. **Conclusion:** The application of preventive oral hygiene agents enhanced the restorations' longevity and reduced the risk of caries development.

### No. 1805 - 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.

**Methods of funding:** Scottish Government Health Directorates.

### No. 1807 - 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 squared 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 toothbrushing, 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.

**Methods of funding:** Örebro County Council, Sweden, gratefully acknowledged, financially supported this study.

### No. 1810 - 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.

### No. 1812 - Complication rate of bridges after a 10 year observation period

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**Aim:** To determine the frequency and spectrum of complications within 10 years of fixed bridge treatment in different age groups. Age is one of the factors influencing the treatment patients receive for tooth loss. **Methods:** The study was approved by the Ethics Committee of Moscow State University of Medicine and Dentistry. All patients were informed about the objective and methods and signed informed consent. It was conducted in 2005-2010. 866 patients of different age groups (20-29, 30-39, 40-49, 50-59, 60 years and older) were examined. They had 2180 fixed bridges. **Results:** In the group of patients of 20-29 years aesthetic defects (53.89±3.86%) were the most frequently reason for replacement. In the older age groups this reason decreased and in a group 60 years and older was 26.48±1.42%. Among other technical defects were retention and failure of bridges: in 20-29 year olds - 8.38±2.15% and 7.18±2.00% respectively, 30-39 - 9.86±1.30%, and 18.21±1.69%, 40-49 - 6.04±0.82% and 19.41±1.35%, 50-59 - 6.16±0.66% and 19.22±1.08%, respectively. Inflammatory periodontal diseases increased with age: 20-29 years old - 13.77±2.67%, 30-39 - 27.32±1.95%, 40-49 - 32.79±1.61%, 50-59 - 36.00±1.31%, over 60 years - 37.52±1.55%. TMJ disorder prevalence also increased with age and in a group of 60 and older it was 4.39±0.66%. **Conclusion:** The results confirm that patient age is a factor influencing the results of prosthodontic treatment with a fixed bridge in case of partial tooth loss.

### No.1814 - Oral Health in 3- to 6-year-olds in South West Germany

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**Aims:** To investigate the current oral health status of 3 to 6 year-old kindergarten children in South- West 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 which 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 South-West Germany.

### No. 1818 - 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 program 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=>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 =>100 (all results:  $p < 0.001$ ). **Conclusions:** Considering a skewed socio-demographic distribution and more favorable 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.

**Methods of funding:** The study was supported by the Tryg Foundation, National Health Insurance and Danish Regions.

### No. 1819 - The association of examination interval and changing dentist with caries experience

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**Aim:** This study aimed at analysing the association between the length of examination interval with caries experience. **Methods:** This retrospective registry- based study was conducted in the Public Health Centre in Lohja, Finland. The Primary Care Board in Lohja granted permission for the study. The study population consisted of adults between ages 30 and 49 years ( $n=5,063$ ). At the first examination, data on the maximum scores for the Community Periodontal Index (CPI), DMFT and the number of teeth with initial caries lesion (IT) were collected from the patient records for the years 1997-2008. Recall interval was counted in days between the two examinations. The response variable was the number of decayed teeth (DT) at the second examination. As a confounder the investigators used whether the dentist in the two examinations was the same. R 2.10 with packages Design and Hmisc was used for descriptive and inferential analyses. Due to an overdispersed dependent variable a non- linear quasi-poisson model was fitted to analyze the associations. **Results:** There were 12,011 pairs of examinations. In 25.5% of cases the dentist changed between examinations. When the dentist changed the average DT was 1.25 compared to 0.86 when the same dentist made the examination. At the first examination, the average DT was 1.27 and 1.04 and the average interval between the examinations was 892 and 738 days, respectively. All independent variables in the model were statistically significant. DMFT and IT were strong predictors of future caries. **Conclusions:** The results suggested that for 30 to 49 year olds a change of dentist has an effect on the association of both examination interval and caries experience. Therefore continuing the care by the same dentist may be recommended. However, the results also suggest that patients who are prone to change dentist may have poorer dental health and their examination intervals may be longer.

**Methods of funding:** The study was supported by Lohja town and Finnish Dental Society Apollonia.

### No.1820 - Use of joint out-of-hours dental emergency services in Finland

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According to the law in Finland the Public Dental Service has to organize emergency dental services for local populations. In the capital region five municipalities (Helsinki, Espoo, Vantaa, Kirkkonummi, Kauniainen) it started a joint emergency clinic at the Haartman hospital in Helsinki in 2009. Opening hours were 16.00 -21.00 at weekdays and 09.00-21.00 at weekends.

**Aims:** To study accessibility and use of the new service and collect information on reasons for visits and fulfillment of the care criteria. **Methods:** All patients who visited the emergency clinic during a two week period in May 2010 were asked to complete a questionnaire about their problems and opinions on the new service. Dentists on duty completed another questionnaire. 365 patients participated. Some patients did not answer all the questions, so the number of responses per question varies. **Results:** The majority of patients (80%, N=292) were working aged adults (18-62 years) and 53% (N=193) were women. Low education was common among the participants (55%, N=156). Most patients (81%, N=228) succeeded in making an appointment with the emergency clinic by their first phone call. Most patients (58%, N=176) came by their own car. The most common reasons for the emergency visit were pain or swelling (69%, N=210), accidental tooth injury or a broken tooth (10%, N=31) and a lost or broken filling (7%, N=21). In general, patients felt that their problems were more urgent than the dentists did. However, in 49% (N=145) of the cases also the dentists considered the conditions severe and needing immediate care. Altogether, in 90% (N=267) of the cases the criteria for an emergency dental patient were fulfilled. Almost half of the patients (46%, N=98) needed an appointment for further treatment in near future. If possible, most patients (81%, N=244) would have chosen a clinic closer to home. **Conclusions:** The study showed that there was a great need for out-of-hours emergency dental services in the Helsinki region which has a population of about 1.1 million. Patients seeking emergency care in the evenings and at weekends had more urgent treatment needs than those seeking care during office hours. The clinic was easily accessible but too far away for many. Thus majority of users came from areas closest to clinic, Helsinki and Espoo.

**Methods of funding:** Helsinki city authority.

### No. 1821 - Treatment backlog in oral healthcare in a community primary healthcare centre

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**Aim:** To explore the treatment backlog of patients attending the Centre of Primary Oral Care (CEMOB), part of the primary healthcare centre Botermarkt, which is located in a multicultural, socially deprived area in the city of Gent, Belgium. The centre aims to reduce socio-economic health inequalities by increasing accessibility. **Methods:** The study was approved by the Ethics Committee of the University Hospital Gent. Patients making a dental appointment for the first time between December 2010 – February 2011 were included. Age, sex, native language and socio-economic background were recorded. The social indicator 'being entitled to increased allowance for health costs,' an initiative for deprived individuals was also recorded. A clinical examination was performed before treatment and the number of decayed, missing and filled teeth recorded. Treatment backlog was determined by the proportion of obviously decayed teeth divided by the number of obviously decayed, missing and filled teeth. Statistical analyses were performed using independent Mann-Witney U tests. **Results:** 126 patients were included. Complete data was available for 85 patients, 41 patients did not attend. There were no significant differences in age and social indicators between those who attended and those who did not. In the group of youngsters and adults (mean age 33.1) the mean DMFT was 12.07 (SD 8.52) with a mean treatment backlog of 45% untreated decay. All of the decay was found in 19% of the sample. A significant difference was found between Dutch speaking and non-Dutch speaking individuals ( $p < 0.05$ ). In the group of children with a deciduous dentition (mean age 5.6) the mean dmft was 3.2 (SD 3.5). The proportion of untreated decay was 51%. All of the untreated decay was found in 46.2% of the children. A significant difference was found between those entitled to 'increased allowance for health costs' compared to those who were not ( $p < 0.05$ ). **Conclusion:** The results show that CEMOB is starting to address the needs of the local community.

### No. 1823 - Knowledge and practice of primary health care personnel in providing oral health care

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**Aim:** This study aimed to assess the knowledge and practice of primary health care (PHC) personnel regarding their duties with regard to oral health. **Methods:** A cross – sectional study was carried out among three groups of PHC personnel in the city of Kerman in the Southeast of Iran. Volunteer and consenting personnel completed a piloted questionnaire which included demographic data, some questions regarding their knowledge about oral health, their duties and also their practice regarding public oral health. The study was approved by research committee of Kerman University of Medical Sciences (k/9/90). All data were analysed using chi – square and Pearson correlation test. **Results:** One hundred and fifty seven out of 230 eligible personnel participated in the study. Sixty percent were Behvarz\*. All personnel reported a good level of knowledge regarding oral health. Despite significant differences among the knowledge of the personnel toward oral health; there was no significant difference between their knowledge related to their duties involving oral health. The Behvarz's group had a higher rate (45.6%) for oral health practice compared to health workers (26.5%) and the health technician groups (12.9%). **Conclusion:** The study suggested that the personnel in Southern Iran have a good knowledge about their duties regarding oral health. However their practice is not related to their knowledge, and this requires further work. \* Behvarz is an auxiliary health worker who has been trained to serve primary care in rural and local health care centers.

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## No. 1824 - Dental treatment-mix for children and adolescents under general anaesthesia at Helsinki PDS

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**Aim:** To investigate dental care for children and adolescents under general anaesthesia (GA) in relation to gender, age and family background in Helsinki, Finland. The Finnish Public Dental Service (PDS) provides treatment under (GA) when referred by public dentists. All services are free-of-charge for 0-17-year-olds. **Methods:** All dental care under GA in 2010 in the Helsinki PDS was analysed from patient records. Treatments were by individual codes/recordings, later combined into 'fillings', 'endodontics', 'extractions', 'sealants', 'other preventive measures', 'radiography' and 'miscellaneous'. Anonymous data included age, gender and family background being immigrant or not. Ethical approval was by Helsinki City Health Department. During 2010, 263 patients aged 2.3- 17.9 years (139 boys and 124 girls) were treated. Two age groups were formed: children 0-6 years (n=146) and adolescents 7-17 years (n=117). Chi-square test served for statistical analyses. **Results:** Among the 0-6-year-old GA-patients, boys dominated over girls (59% vs. 41%, p=0.03). Immigrant background was frequent among those under 7 years compared with the 7-17-year-olds (48% vs. 14%, p<0.001). In total, 2,428 dental treatments were performed for these GA-patients (n=263). From among them, 92% received fillings, 65% extractions, 36% endodontics, 22% radiography, 20% sealants, and 13% other preventive measures. Comparison by age showed that children under 7 years, dominated in receiving fillings (97% vs. 85%, p=0.002) and endodontics (51% vs. 17%, p<0.001). Adolescents dominated in receiving radiography (30% vs. 16%, p=0.006) and prevention other than sealants (18% vs. 8%, p=0.018). Of all treatments (n=2,428) 61% were fillings, followed by extractions (21%), sealants (6%), endodontics (6%), and radiography (4%). The mean number of fillings placed per GA-patient was 5.6 (SD=3.4), extractions 2.0 (SD=2.2), and sealants 0.5 (SD=1.2). **Conclusions:** A conservative approach dominated dental treatment provided under GA by the Helsinki PDS. Immigrant background should be taken into account in the preventive work among the youngest children.

## No. 1825 - Non-carious cervical lesions restorations with self-etch and etch-and-rinse systems: one-year clinical report

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**Aims:** To evaluate and compare the one-year clinical performance of non-carious cervical restorations with self-etch (SE) and etch-and-rinse (ER) adhesives. As the population ages and teeth are increasingly retained for life, the incidence of non-carious cervical tooth surface loss is increasing but little is understood about the restorative treatment outcomes. **Methods:** This prospective trial approved by the University Fernando Pessoa Ethical-commission was conducted in 2009-2010. After signing informed consent forms, 29 patients (24-63 years-old) attending the FHS-UFP- Dental-Clinic, received 77 class V (2mm depth non-carious cervical lesions in premolar teeth) restorations. They were randomly allocated to two groups (composite/adhesive); Group-SE: 43 restorations Amaris®/FuturabondNR; Group-ER: 34 restorations Amaris®/SolobondM (Voco/Cuxhaven;Germany). Inclusion-criteria were used in the patients' recruitment; Restorations were evaluated by the USPHS-criteria and Hickel et al. (2007) recommendations, by three-examiners. PASW®Statistics 18.0 was used for descriptive and inferential analyses using non-parametric tests (p<0.05). **Results:** At the one-year follow-up 77 restorations (29 patients) were examined. Patients mean(±SD) ages were 49.3(±10.9)years and 50.1(±11.5) years in Groups-SE and-ER, respectively; Both, SE and ER restorations showed success rates of 100%. In longitudinal analysis 100% (n=34) of ER restorations rated as clinically excellent (alpha, levels 1 and 2) while 2.3% (n=1) of those with SE showed satisfactory properties (Bravo, level 3) regarding colour stability (aesthetic), fracture and retention (functional) and enamel cracks (biological), but no significant differences (McNemar/Wilcoxon tests, p>0.05) were perceived for both, SE or ER systems. Cross-sectional examination reported no significant differences (Fisher/chi-square tests, p>0.05) between SE and ER, regarding restorations aesthetic, functional and biological parameters. **Conclusions:** Non-carious cervical restorations using the SE/ER adhesives reported no clinical differences regarding the aesthetic, functional and biological performance, up to one-year. Faced with the tendency towards adhesives with simplified treatment procedures long-term evaluations are needed to compare ER and SE adhesives and to analyse the value of restoring non-carious cervical lesions with acceptable clinical results.

**Methods of funding:** Acknowledgment: This study was supported by VOCO GmbH, Cuxhaven, Germany.

## No. 1826 - Periodontal disease and treatment needs assessment in a Portuguese institutionalized elderly population

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**Aims:** To estimate the prevalence and severity of periodontal disease in an institutionalised aged population of Porto district (Portugal) and to assess treatment needs. **Methods:** This observational and cross-sectional study was approved by the Ethical Commission of the University of Fernando Pessoa. Twenty two residential homes in Porto District were selected using a cluster random sample of 371 people. 257 were aged 60+ years (who signed an informed consent) were dentate and were examined in 2007 (conducted in subjects' home by a trained examiner, using a mobile dental unit equipped with dental chair and surgery light). Periodontal condition and treatment needs were assessed using the Community Periodontal Index (CPI) in the 203 (54.7%) persons that were included for this evaluation, as proposed by the WHO. Descriptive and inferential analysis was carried out using SPSS®vs.17.0. Prevalence percentages were calculated and for statistical tests, the confidence level was set at 95%. **Results:** 63.8% (N=1419) of all sextants were excluded (due to CPI evaluation conventions). Of the remainder, 2.9% (N=64) [95%CI: 1.2%-4.6%] were considered healthy, 8.6% (N=191) [95%CI: 5.7%-11.5%] presented gingival bleeding, 18.3% (N=408) [95%CI: 14.4%-22.2%] calculus, 5.6% (N=125) [95%CI: 3.3%-7.9%], 3.5 to 5.5mm periodontal pockets and 0.8% (N=19) [95%CI: 0%-1.7%] showed >6mm periodontal pockets. The results indicate that the most prevalent treatment needs were scaling and pocket therapy due to the calculus and periodontal pockets severity, followed by a preventive approach and oral



hygiene instruction. **Conclusions:** Periodontal disease is common in the elderly institutional Porto population, which is similar to data from WHO regarding global oral health. Good periodontal health is virtually absent. These findings are important for the future planning of dental services, as the most efficient way to prevent periodontal disease is to control it as early as possible, in childhood or in young adult life.

### No.1827 - Young swedish adults' views on measures of oral health related 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 women 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.

**Methods of funding:** The study was supported by Malmö University, Malmö and Halmstad University, Halmstad, Sweden.

### No. 1828 - 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.

**Methods of funding:** Acknowledge to the Quebec Health Research Funding Agency (FRSQ).

### No. 1829 - Human Resources Training: perceptions of future professionals about Integrative Practices in Dentistry

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**Aim:** The aim of this study was to identify perceptions of dental students on Complementary and Integrative Practices in Health (CIPH). This includes acupuncture, laser therapy, homeopathy, hypnosis, flower therapy and herbal medicine. The literature suggests that CIPH may help for the treatment of patients who are unresponsive to conventional therapy. **Methods:** This research was approved by the Ethics Committee of the School of Dentistry, University of Campinas (protocol number 113/2010). The students were approached in the classroom. Students interested in answering the questionnaire signed the consent form and were immediately sampled. This quantitative-qualitative study with a semi-structured instrument was used with 97 dental senior year students, with 61 students who attended a public university and 36 students from a private university. **Results:** In the public faculty 95% (n=58) of students were aged between 20 and 25 years old; 40% (n=24) knew about CIPH; 15% (n=9) said that the faculty was their main source of knowledge; 80% (n=49) thought that the teaching of CIPH in undergraduate was important. In the private faculty 61% (n=22) students were aged between 20 and 25; 78% (n=28) knew about CIPH; 44% (n=16) said the media was the main source of knowledge; 89% (n=32) thought that the teaching of CIPH in undergraduate was important. **Conclusions:** Based on the findings we have concluded there is interest among some dental students in learning and possibly using the CIPH in their professional life. However, the information they have about the CIPH is close to common sen-

se and, therefore the introduction of the teaching of these practices is essential in the curricula of dental schools. The difference between the dental education offered by public and private schools suggests dental education with an emphasis on research in public schools, while the private schools offer dental education focused on the market.

**Methods of funding:** This research is supported by Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), process number 2010/05217-0.

### No. 1830 - Oral health of 1-year-old Thuringian children, Germany

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**Aim:** The aim of this study was to investigate the impact of a preventive program on oral health of Thuringian children in Germany. Early Childhood Caries (ECC) is the most common infectious disease in childhood and affects children's growth, development, behaviour and diminishes their quality of life. **Methods:** All parents of newborns (n = 1162) born in Jena, Thuringia from July 2009 to October 2010 received a patient information and consent form about the study and had the opportunity to take part in this ethics committee approved program. A total of 416 children (mean age  $7.2 \pm 2.07$  months) were examined during their first dental visit and counseling. Dental caries was scored using WHO 1997 diagnostic criteria at d1- level without radiography. For assessment of oral hygiene and feeding behaviour parents answered questions during the examination and the presence of dental plaque was scored. All records were produced by the same calibrated dentist (YW). For preventing initial caries progression lesions were treated by fluoride varnish application (Fluoridin N5, VOCO GmbH, Germany). Children were included in a risk related recall system. **Results:** The dentist was calibrated using extracted teeth and intra-rater reliability was almost perfect ( $\kappa=0.98$ ). In 2010 caries prevalence was 0.7% in 1-year-olds. Caries experience amounted to 0.02 dmft/0.01 dmfs. 4.8% of the children revealed initial carious lesions. 28.6% of the parents brushed their children's teeth. 37.5% of the children had dental plaque. 29.3% of the children revealed an increased caries risk (28 children suffered from a general disease, 23 children with familial ECC burden, 71 children with breast/bottle feeding > 3 times/night). **Conclusions:** Early dental visits are essential for diagnosis of ECC, to inform the parents and to prevent the caries progression. After 3 years examined data will be compared with children who did not take part in the preventive program as control group and the impact of the program on oral health will be investigated.

**Methods of funding:** This study was supported by VOCO GmbH, Germany.

### No. 1831 - Inherited sleep-related bruxism in young adults

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**Aim:** The aim of the present study was to examine the role of genetic and environmental factors in the phenotypic variance of bruxism in a large population-based cohort of young adult twins in Finland. **Methods:** The material of the present study derives from the FinnTwin16 cohort study consisting of five birth cohorts of 3065 twin pairs born in 1975- 1979 (mean age 24, range 23-27 years) who completed a questionnaire with data on frequency of sleep-related bruxism in 2000-2002 (the response rate was 88%). Of the 1141 twin pairs with pairwise status for bruxism, 33% were monozygotic and the rest 67% same sex (32.4%) or opposite sex (34.3%) dizygotic pairs. The study protocol was approved by the ethical committee of the Department of Public Health, University of Helsinki, and the Institutional Review Boards of Indiana University. Subjects were told about the study goals and provided informed consent. We used quantitative genetic modelling, based on the genetic similarity of monozygotic and dizygotic twins, to estimate the most probable genetic model for bruxism, based on decomposition of phenotypic variance into components: additive genetic effects (A), shared environmental effects (C), and non- shared environmental effects (E). **Results:** On average 8.7% experienced bruxism weekly, 23.4% rarely and 67.9% never, with no significant gender difference ( $p=0.052$ ). The best fitting genetic model for bruxism was the AE-model accounting for 52% (95% CI 0.41-0.62) of the total phenotypic variance by the additive genetic effects and the rest 48% (95% CI 0.38-0.59) by non- shared environmental effects. Sex-limitation model revealed no gender differences. **Conclusion:** In conclusion, genetic factors account for a substantial proportion of the phenotypic variation of the liability to sleep-related bruxism, with no gender difference in its genetic architecture.

### No. 1832 - Effectiveness of an oral health care guideline in nursing homes

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**Aim:** The aim of this study was to compare a supervised versus a non-supervised implementation of the Dutch "Oral health care guideline for Older people in Long-term care Institutions" (OGOLI) and a daily oral health care protocol derived from the OGOLI on dental and denture plaque scores of care home residents in The Netherlands. **Methods:** The study protocol was approved by the Ethics Committee of The Radboud University of Nijmegen. The study involved a single-blinded cluster randomised controlled trial in 12 nursing homes with a nursing home as the unit (cluster) of randomisation. A sample of 12 nursing homes in the Netherlands each accommodating 120-250 somatic as well as psychogeriatric residents were randomly allocated to an intervention or control group. While the residents in the control group received oral health care as before, the intervention consisted of a supervised implementation of the OGOLI and a daily oral health care protocol derived from the OGOLI. In each care home oral examinations were carried out on a random sample of, initially, 30 residents. All care home residents and their legal representatives were informed about the study objective and methods. The dental status and plaque scores would be assessed by a clinical oral examination, at the start of the study (baseline) and after 6 months. Written informed consent was requested. A replacement strategy was used for residents who did not consent or were unable to participate for other reasons. Oral examinations were carried out by a team of calibrated external examiners. The examiners were blinded to the allocation of a nursing home to the intervention or control group. At 6 months examiners were not allocated to the same care home as at baseline. For assessing dental status, the number of teeth was counted. Residents with at least one tooth were registered as dentate. Also, residents' removable complete

and/or partial dentures were registered. Dental plaque was assessed using the plaque index (Silness and Løe (1964), score range 0-3) of the 'Ramfjord teeth'. In the absence of one of these teeth, the corresponding distal neighbour tooth was assessed. The denture plaque was assessed using a Methylene Blue® denture plaque disclosing solution according to the method of Augsburg and Elahi (score range 0-4). In case residents were wearing two removable dentures, the denture plaque scores were averaged. Given the characteristics of the oral hygiene outcome variables, non-parametric tests were used in the bivariate analyses. Group means were calculated for main outcome variables for each group at each time point in the trial. Baseline differences between the intervention and the control group were tested using the Chi-square test for categorical variables and the Student-t test for continuous variables. Correlation between relevant independent continuous variables and plaque scores was tested by Spearman's rank correlation coefficient. At 6 months, the Student-t-test (paired and unpaired) was used to test differences between and within the intervention and control group for the dependent variables. Because of the hierarchical structure of the data (clustered within the randomised nursing homes), multilevel mixed model analysis was used to estimate differences in plaque scores between allocation groups at 6 months. In addition, the multilevel mixed model analysis was used to test the effect of the impact of confounding variables. These confounding variables were care home, ward type (somatic/psychogeriatric), age, gender and CDS-score. These analyses incorporated adjustment for the corresponding baseline values. **Results:** In total 2,331 residents were involved in the project, 1,157 in the intervention and 1,174 in the control group. At baseline, the overall random sample comprised 342 residents, 177 (52%) in the intervention group and 165 (48%) in the control group. At baseline, 70 residents (20%) of the total study population were dentate without a removable complete or partial denture, 29 (16%) in the intervention and 41 (25%) in the control group. The number of dentate residents with at least one removable complete or partial denture was 24 (14%) in the intervention group and 21 (13%) in the control group. The mean dental plaque score of the intervention group was significantly higher than that of the control group ( $2.29 \pm 0.53$  versus  $1.93 \pm 0.72$ ). Baseline mean denture plaque scores were similar in the intervention and the control group ( $2.82 \pm 0.76$  versus  $2.85 \pm 0.94$ ). At the end of the study period statistically significant differences were observed between the intervention and the control group for mean dental as well as denture plaque, with a beneficial effect for the intervention group. When compared to baseline mean dental and denture plaque scores, at 6 months a beneficial effect of the intervention was observed: 0.43 or 30% lower dental plaque score and 0.38 or 20% lower denture plaque score. However, the multilevel mixed model analyses conducted with the dental and denture plaque scores at 6 months as outcome variables showed that the reduction by the intervention was statistically significant for denture plaque, but not for dental plaque scores. **Conclusion:** This study proved that a supervised implementation of the OGOLI and daily oral health care protocol was more effective than a non-supervised implementation in reducing mean dental and denture plaque scores at the end of the 6 months study period. However, the reduction of mean dental plaque scores could not be explained by the intervention exclusively.

#### **No. 1833 - Retrospective study of root-shaped dental implants of various diameters: 5-year results**

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**Aim:** The aim of this retrospective study was to evaluate the long-term survival and success rates of screw-type root-shaped (MIS) implants of various diameters. **Methods:** A retrospective study of patients receiving root-shaped screw-type dental implants placed between 2004 and 2010 was conducted. The patients had all been treated at the Gulhane Military Medical Academy, Ankara. As the study was retrospective, ethical approval was not required. The cumulative implant success rates were evaluated. **Results:** In all, 288 implants (3.75 mm: 108 implants; 4.2 mm: 100 implants, 5.0/6.0 mm: 80 implants) were placed in 116 patients (64 women, 52 men; mean age 54.3 +/- 9.1 years). The overall cumulative 5-year success rate was 97.3%. A failure rate of 4.6% (5/108) was seen for 3.75-mm-diameter implants; the corresponding figures for the 4.2-mm and wide-diameter (5.0/6.0-mm) implants were 2% (2/100) and 1.2% (1/80), respectively. **Conclusion:** The root-shaped implants used in this study showed success rates above 95%.

#### **No. 1834 - Evaluation of pattern of impaction of mandibular third molar teeth in a group of volunteers in Turkey**

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**Aim:** The aim of this retrospective radiographic study was to investigate the pattern of mandibular third molar impaction in a group of outpatients in Gulhane Military Medical Academy (GMMA). **Methods:** Three hundred and sixty eight orthopantomographs of patients 20-40 years old, who attended GMMA between April 2010 and March 2011 were examined. Informed consent was obtained from all patients. The level of impaction assessed using PELL and GREGORY (P&G) classification. **Results:** Patients between the ages of 20 and 40 years were included. They presented with 258 impacted mandibular third molars. Assessing the level of impaction using P&G classification showed that 108 (41.9%) impaction were in position A, 85 (32.9%) were in position B while 65 (25.2%) were in position C. 52 (20.2%) were in position I, 148 (57.4%) were in position II, while 58 (22.4%) were in position III. **Conclusion:** Third molar impaction is a common problem in outpatients aged 20 to 40 years, attending GMMA.

#### **No. 1836 - Evaluation of a new dental instrument in caries school-children-program monitoring**

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**Aim:** This study was designed to assess the effectiveness of a new dental instrument compared to conventional instruments, in high risk children in a school program in Canada. **Methods:** Ethical approval was from McGill University Faculty of Medicine and written parental consent for each child's participation was collected. Three dental public health hygienists working in the Quebec provincial program were trained and standardised using clinical pictures and exams to use a new dental instrument named exprober designed to provide 3-in-1 activities; carious lesion detection, pocket probing and cleaning of light calculus and plaque. The exprober has one tip designed as a perio-probe (ball-ended) but graduated for caries and perio with adjacent wings and curves for plaque cleaning. The sharp tip is designed to prevent hard tissue damage if excess pressure is used. The stu-

dy was part of a school-based dental screening and preventive program with 30 children of 5-6 year old categorised as high risk for caries. In this program, children are exposed to biannual education and topical fluoride interventions for 36 months. At the age of eight years, a follow-up dental exam was performed for preventive and operative treatment needs: this visual-tactile exam is routinely done with a dental explorer, mirror and 2 X 2 cotton gauze. Data was generated by a split-mouth design for the exam of the 30 children with random allocations by computer generated list. The study's clinical outcomes were; plaque scores using disclosing tablets, caries experience (dmfs), number of preventive contacts and timings of the new instrument compared to conventional instruments. Traumatic damage was defined as pressure with the sharp tip sticking in any potential lesion with an explorer compared to the exprober: this was measured by total frequency of each event. The analysis was with statistical SAS software using t-tests. **Results:** The exprober with mirror was statistically ( $p < 0.05$ ) better than conventional instruments for plaque-cleaning, shorter time of dental exams, for dmfs score, for traumatic damage prevention, for optimal preventive advice and for patient's positive perception. **Conclusion:** The development of a new dental instrument for simultaneous visual-tactile caries/risk/plaque-control diagnosis appears to be better than traditional dental instruments in clinical field conditions when used in dental public health programs.

**Methods of funding:** Funding: Acknowledge to Quebec Health Research Funding Agency (FRSQ).

### No.1837 - Oral health promotion as a part of diabetes nurses' work

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**Aim:** To determine diabetes nurses' understanding of and practices in promoting oral health with emphasis on periodontal disease among diabetics. Diabetes mellitus is a global public health problem. There is evidence of a two-way relationship between diabetes and periodontal disease indicating periodontal treatment is a vital part of diabetes care. In Finnish public health care a diabetic nurse has been patients' primary contact person since 1980s. **Methods:** The study population was 306 Finnish diabetes nurses randomly drawn from the register of the Finnish diabetes nurses' association, of whom 51.3% (n=157) responded to a questionnaire mailed in October 2010, with questions related to knowledge of and practices in oral health promotion, in addition to some background information. Statistical evaluation was performed using the SPSS program with Chi-square tests.

**Results:** All diabetes nurses agreed that regular oral health care is important for diabetics and knew that bad oral health is also a risk for general health. A vast majority (n= 129, 83%) considered oral health care equally important to general health care. Less than half (n= 66, 42%) reported that they had received no information about oral health during their training. Knowledge related to periodontal diseases was found to be insufficient, yet almost everyone (n=156, 99%) knew that bleeding while brushing teeth is not normal. Less than half (n=66, 42%) discussed oral health with their patients, often or relatively often, but 71% (n=111) agreed that they did not possess enough information about oral health problems in diabetics. There was a positive association between received training in oral health aspects and nurses discussing these matters with a patient. **Conclusions:** Appreciation of the significance of oral health in the total treatment of diabetes among diabetic nurses should not be underestimated and their work should be supported by proper training and educational material.

**Methods of funding:** To Finnish Diabetes Association for financial support.

### No. 1838 - Knowledge Of Hepatitis B Virus Infection Among Dental Students

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**Aim:** Hepatitis B is an infectious illness caused by hepatitis B virus (HBV) that is the world's most common blood borne viral infection. Occupational risk of Hepatitis B infection is high in dentistry and dental students must know about it, especially during the professional training period. The present study was conducted among dental students of the Faculty of Dentistry, Istanbul University to assess their knowledge regarding Hepatitis B. **Methods:** A 22 item questionnaire was administered to the final year 100 dental students regarding Hepatitis B vaccine, disease, and mode of spread, sequelae and prevention. The 100 final year dental students were recruited to evaluate their awareness and attitude about Hepatitis B virus infection at the end of their dentistry education. The institutional review board of the faculty reviewed and approved the informed consent forms. **Results:** The mean success rate for the 100 dental students in the questionnaire was 79%. The percentage of correct answers to questions considering the Hepatitis B Virus markers and blood test results was 77%. The share of correct answers for the vaccination doses for prevention of Hepatitis B Virus, vaccination safety, the situations where vaccination can be ignored and the levels of Hepatitis B markers in blood evaluation following the vaccination was 74%. The knowledge regarding to spread of the disease was satisfactory with 99% (N=99). They were aware of being in the risk group for Hepatitis B infection. Knowledge regarding the blood tests of HBV and their meanings. **Conclusion:** There is need for improving knowledge about HBV and training in should start early in the undergraduate curriculum.

### No. 1839 - Short-Term Effect of L. bulgaricus Fermented Milk on Salivary Microbiota

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**Aim:** The aim of the present study was to assess whether the short-term consumption of milk fermented with yogurt starter L. bulgaricus can affect the salivary counts of mutans streptococci and lactobacilli and salivary IgA (sIgA) levels in healthy volunteers. **Methods:** The study protocol was approved by the Faculty of Dental Medicine, Plovdiv. 36 healthy volunteers, mean age 24±4, participated in this self-controlled clinical trial after receiving detailed instructions on participation and signing written consent. The volunteers were recruited based on their interest in healthy properties of yogurt, and showing no active carious lesions during clinical intraoral exam. The study design was divided into three two-week phases: a washout, intervention and follow up period. Participants were instructed to discontinue fermented milk intake throughout the study. During the intervention period individuals consumed 100 ml fermented milk containing 10<sup>10</sup>CFU/ml live L. bulgaricus strain LB83, divided into two intakes after morning and evening meals. Unstimulated whole saliva was collected at baseline, week 1, 2, 3 and 4 of the study. Salivary

mutans streptococci and lactobacilli were enumerated by culturing on selective media. Levels of secretory IgA were analysed by ELISA. The effects of yogurt intake on salivary microorganisms were assessed by means of the non-parametric Wilcoxon signed-rank test. Statistical analyses were performed using SPSS (ver. 16.0), and the level of significance was defined at  $p = 0.05$  (2-tailed). **Results:** An exponential increase in total Lactobacillus counts in saliva occurred during the first and second weeks of fermented milk intake. No significant changes in mutans streptococci levels were observed during the whole study in 68% of the participants ( $n = 24$ ) ( $p > 0.05$ ). Termination of the intervention resulted in restoration of lactobacilli counts to baseline levels. Increased sIgA levels after the first week of milk administration was observed in 71% of the participants ( $n = 26$ ) and values were significantly lower at the end of the follow up period. **Conclusions:** Supplementation of *L. bulgaricus* increases salivary lactobacilli counts, however, with no significant effect on mutans streptococci. Probiotic administration could lead to temporary increase of sIgA levels, perhaps strengthening resistance to infections in the mouth. **Methods of funding:** Medical Univeristy Plovdiv Grant.

#### No. 1840 - Dentate Status of Elderly Istanbul Dental Patients referred to a maxillofacial radiology department

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**Aim:** The aim of this study was to evaluate the dental status and the prosthetic needs of a group of elderly dental patients. **Methods:** 206 (108 female, 98 male) patients aged 65 years or older who attended the Oral Diagnosis Clinic of Oral and Maxillofacial Radiology Department, Faculty of Dentistry, Istanbul University were examined clinically and radiologically. The oral status of the patients was recorded according to the Kennedy classification, presence of root fragments, impacted teeth all of which were determined from their panoramic radiographs. Patients were selected from healthy individuals 65 years or older without any recorded diseases in their medical histories. The institutional review board of the faculty reviewed and approved the study. Patients signed informed consent forms. **Results:** 2.94% ( $N=6$ ) of the patients had all their maxillary teeth, 3.45% ( $N=7$ ) had all their mandibular teeth. Only one patient was fully dentate (0.5%). 14.6% ( $N=30$ ) of all patients were edentulous. In 36 patients' panoramic radiographs root fragments were seen. 17 impacted teeth were seen in 12 patients' panoramic radiographs. 84.9% ( $N=175$ ) of the patients were partial dentate. 99.5% ( $N=205$ ) of the patients needed restorative treatment of some kind. **Conclusion:** This study showed a high treatment need among patients aged 65 years or older referred to the Faculty of Dentistry, Istanbul University. Improving the quality of life of elderly people by maintaining their oral health is a clear role for dentistry.

#### No. 1841 - Clinical evaluation of toothpastes for young children in the prevention of dental caries

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**Aim:** The aim of this study was to evaluate the clinical effectiveness of toothpastes with different active components in the prevention of dental caries in young school children. Improvements in oral hygiene and significant reductions in dental caries among children in the last two decades in Belarus, were due to increasing use of toothpastes. However the effectiveness of different composition of available toothpastes in this country has not been evaluated. **Methods:** 553 children aged 6-7 year (mean 6.6 yrs) from 6 randomly selected large schools participated in a 2-year programme of daily supervised toothbrushing (during school days) using three commercially available toothpastes for children with active components: (1) Fluoride free Mineralin® Kids (Ca, P, Mg + xylitol 12%), (2) Amifluor® 500 p.p.m. F- + xylitol 10%, (3) NaF 1100 p.p.m. F-. 180, 188 and 185 school children were in groups 1, 2, 3 accordingly. Group 4 (173 children) was a "passive" control with no supervised toothbrushing. Oral hygiene (Green- Vermillion, 1964) and DMFT were recorded by four clinically calibrated dentists. Double blind methods was used in the study protocol. Adequate sanitary conditions were provided, ethics approval and consent of parents were received. Statistical analysis was performed using ANOVA. **Results:** At baseline oral hygiene and prevalence of dental caries in all four groups were similar (mean 1.70 OHI-S) with no statistical differences ( $p > 0.05$ ). In group 1: mean DMFT was  $0.29 \pm 1.25$  S.D.; in group 2 mean DMFT was  $0.35 \pm 1.52$  S.D.; in group 3 mean DMFT  $0.40 \pm 1.31$  S.D.; in group 4 DMFT  $0.42 \pm 1.16$  S.D. ( $p > 0.05$ ). After two years of toothbrushing (mean age 8.6 years) the oral hygiene index was improved by 53-61% in the study groups and by 32% in the control group. The DMFT in the control group increased to  $1.36 \pm 1.28$  S.D. For groups 1, 2, 3 DMFT scores were  $0.95 \pm 1.12$  S.D.,  $0.93 \pm 1.13$  S.D.,  $0.96 \pm 1.24$  S.D. accordingly which means the reductions of two year increments were 30%, 32% and 29% ( $p < 0.05$ ). **Conclusion:** Two years of a supervised school toothbrushing programme involving 553 subjects of 6-7 year old school children using different commercially available toothpastes with active components Mineralin, Amifluor, NaF has resulted in improving oral hygiene by 53-61% from initial level and reduction of dental caries increment by 29-32% with no difference in clinical effectiveness between the three toothpastes.

**Methods of funding:** Minsk Public Health Committee, Belarus funded this study and oral hygiene aids were provided free by the WDS Laboratories, Russia.

#### No. 1842 - Developing psychometrics to predict maternal self-efficacy for toddler tooth-brushing routines

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**Aims:** The aim of this study was to develop a cost-effective, validated tool for identifying parents at risk of low parental self-efficacy (PSE) when establishing tooth-brushing routines. Early childhood caries (ECC) is a pervasive public health problem globally with low adherence of tooth-brushing routines being a recognised factor. It is important to identify early barriers to tooth-brushing routines. In particular, parental self-efficacy (PSE) is known to be a moderator in the establishment of tooth-brushing routines with infants. **Methods:** Ethical permission was gained from the University of Salford Ethics Committee. Informed consent was gained from all participants. Semi-structured interviews with 16 first-time mothers of children aged 24 – 30 months

were conducted. The mothers who were interviewed were recruited from Children's Centres. Perceived barriers and facilitators associated with current practices in tooth-brushing routines were identified at multiple levels (child, caregiver, family, community). 25 scale items were generated and rated by an expert panel before validation of a final item pool with 150 mothers of pre-school children aged 24 – 30 months. These 150 mothers were recruited via Children's Centres and a recruitment advert played on a local radio station. **Results:** Internal consistency and test-retest analyses were conducted and exploratory factor analyses were undertaken to confirm factors within the scale. Analyses demonstrated degrees of reliability for individual scale items and for the whole scale. Factor analyses demonstrated the factors underlying the structure of the scale. **Conclusions:** Initial analyses indicate this scale may be a useful tool in identifying mothers at risk of requiring additional support during the process of establishing tooth-brushing routines with their children. Additional validation of this scale will be conducted, specifically predictive validity analyses using observational data examining parenting strategies to encourage toddler compliance during tooth-brushing.

### No. 1843 - A population-based analysis about sites and stages of oral-oropharyngeal tumours in Northern-Germany

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**Introduction:** Oral cancer and oropharyngeal cancer, together, is the 7th leading tumour in Europe. In Germany, more than 10,000 new cases are diagnosed each year and more than 4,000 individuals die of this tumour. The analysis of the trends for the tumour sites and especially for the tumours stages with regard to gender and age is still under researched, although more than two-thirds of the new cases are diagnosed at advanced stage. **Aim:** The aim of this population-based study was to evaluate the trends for the tumour sites and tumour stages with regard to gender and age over the period from 2000 to 2007 within the State of Schleswig-Holstein, Germany. **Methods:** Key questions were formulated to interrogate the data base of the Cancer Registry of the Schleswig-Holstein with regard to the aims of the study. From the recorded data all oral and oropharyngeal cases were identified and analysed. The project was approved by the Ethics Committee of the University of Kiel, Germany (AZ: A113/06) **Results:** From 2000 to 2006 3,127 new cases of oral and oropharyngeal cancer were diagnosed within the Schleswig-Holstein, an average of more than 450 cases per year (72% in men vs 28% in women). Detailed analysis of the subgroups tumour sites and tumour stages showed interesting differences from 2000 to 2007: The highest incidence and mortality rates were observed for both genders. The highest stage IV (UICC) incidence rates were found for oropharyngeal tumours, followed by oral cancer (including the lips) in men in contrast to women. Here, the highest number of stage IV were observed for oral cancer (including the lips), followed by oropharyngeal cancer. The majority of the cases were between 60-79 years old for men and women. **Conclusions:** This population-based analysis demonstrated the need for further work to produce a more complete epidemiological profile of the oral and oropharyngeal tumour. These profiles are essential for effective evaluation of disease burden and for the development of preventive strategies.

**Methods of funding:** The project was supported by the Deutsche Krebshilfe (German Cancer Aid).

### No. 1844 - Children's understanding of oral health routines: exploration using draw & write

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**Aim:** To investigate children's perspectives of morning and night time oral health routines through self-report Draw & Write (D&W). To understand routine development through the evaluation period of a school oral health programme (SOHP). **Methods:** 6-8 year olds across 13 primary schools (n=256) in the North West of England took part in an evaluation of a 1 month SOHP (n=8 intervention, n= 5 controls sampled by socioeconomic status). To explore toothbrushing routines children were asked to D&W what you do: Q1 - to get ready for bed? or Q2 - in the morning? Draw any snacks or drinks you have? Does anyone help or tell you what to do? What order do you do things to get ready? All D&W responses were initially coded using content analysis, with those depicting routines being further analysed to understand any changes to routines across the evaluation period (pre-, post- & 6 month follow-up). A routine was defined as a sequence of events drawn/written in a clear chronological order. Ethical approval was gained from the University of Salford with parents providing informed consent and children providing assent on the day. **Results:** Between baseline (6-7 yrs old) and follow-up (7-8 yrs old) the depiction of routines became more complex regarding the number of sequenced steps. Consistency in timing of toothbrushing prior to, or following breakfast, in routine sequences was not present in children's morning routine. Children attending schools in more deprived areas were more likely to D&W about single behaviours related to the time of day instead of routine sequences. Overall numbers of children able to D&W a routine were: pre- (n=13), post- (n=100) & follow-up (n=43). **Conclusions:** Using accessible research techniques such as D&W improves the knowledge base regarding development and understanding of children's routines. Children as young as 6 are able to depict and explain routines including how toothbrushing is or is not incorporated, possibly informing future interventions targeting toothbrushing.

**Methods of funding:** This project was funded by Unilever Oral Care.

### No. 1846 - An unusual complication of arsenic necrosis of the cheek mucosa: a case report

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Arsenic was a "tooth pulp devitalising" agent used throughout dental history when anaesthesia was not available. Arsenic, is usually encountered in dentistry as its trioxide, a water-soluble compound, forming arsenious acid. Because of the potential for leakage, the use of arsenic oxide for devitalising pulp was always unsafe. For this reason, and after historical improvements in local anaesthesia, the use of arsenical "devitalising pastes" gradually declined. Arsenic and its compounds are known to be extremely toxic on contact with hard and soft tissues, and prolonged application or leakage of arsenic trioxide can cause severe damage to the periodontal tissues and alveolar bone. In this case report, the patient was a 32 years-old male referred to our

clinic because of pain and a wound in his right cheek mucosa. Under questioning, it became clear that arsenic was used for pulp devitalisation in his right maxillary first molar. Special tests included a soft tissue MR. Prior to operation with a laser, he was prescribed a liquid bepanthene mouthwash twice a day. Five days post op using the mouthwash the wound had healed. The patient was pain free. This case report highlights that arsenical pastes are still employed in endodontics and highlight the potentially serious consequences of their use. To prevent the use of arsenic, physicians should be informed about the hazards of this material. Arsenical pastes have no place in contemporary dental practice due to side and toxic effects. Dentists should employ appropriate local anaesthetic techniques for pulp extirpation instead of relying on toxic necrotizing agents.

### No. 1847 - The predictors of Turkish mothers' perceptions of their preschool children's oral health

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**Aim:** The aim of this cross-sectional study was to determine the predictors of mothers' perceptions of their children's oral health. Mothers' perceptions of their children's oral health can affect the preventive dental care children receive at home and their use of professional dental services. **Methods:** The study sample consisted of 121 parents of 5- 6 years-old children attending nursery classes of three public schools in Fatih Province of Istanbul City in the 2010 school year (response rate= 92 %). The study protocol was approved by the Turkish Ministry of Education. Data were collected through clinical examinations and self-completed questionnaires including socio- demographic variables, mothers' perception of their children's oral health, dental visiting patterns of children and mothers, and parent-defined need for dental care. Caries experience was recorded using the dmft index. Gingival inflammation was evaluated using the gingival index of Löe and Silness (1963) in all nonexfoliated primary teeth. Data were analysed using descriptive statistics, Mann - Whitney U test, Chi-square test, and binary multiple logistic regression. **Results:** Univariate statistics showed that the presence of caries and gingival inflammation in children, lower levels of household income, lower level of mother's education, perceived need for dental treatment, having more than one children and children's having had dental visits were strongly associated with poorer mothers' ratings of their child's oral health. Multivariate statistics indicated that the presence of gingival inflammation ( $p<0.001$ ), lower levels of household income ( $p<0.01$ ), and perceived need for treatment ( $p<0.05$ ) were the most important predictors of poorer mothers' ratings of their children's oral health. **Conclusion:** Understanding factors which are associated with mothers' perceptions about their children's oral health may help oral health professionals to develop and implement effective school- based oral health promotion programs and dental services.

### No. 1848 - A Descriptive Study of Oral Hygiene Habits of 8th Grade Students, Turkey

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**Aim:** The aim of the study was to determine the oral hygiene habits of a group of 8th grade students in a province in Turkey. **Methods:** The data used in this study came from routine oral health records. The study was approved by the Ministry of Education of the Turkish Government. A total of 138 children were evaluated. Data were collected from parents by a structured, pre-tested, self administered questionnaire which consisted of questions related to oral hygiene and dental visiting habits as well as age, educational level and working status of parents. The participation in the study was volunteer- based. The oral consent of the students was obtained. The data were processed by SPSS 15.0 program and evaluated by means of marginal and contingency tables. **Results:** The age of the subjects was between 13-14 years. 52.9% of the students were male. The age of mothers was between ages of 30-51 years while fathers were 35- 57years of age. 79.0% of fathers and 73.2% of mothers were graduated from university. 76.8% of mothers and 92.8% of fathers had a regular job. Of the students, 5.0% had never visited a dentist. More than one-third (39.9%) did not remember their age at their first dental visit; one-third of the students had their first dental visit between the ages 5-8. Only 27.5% of the students stated that they visited a dentist regularly. However, 58.6% of the students made dental visit at least twice in the previous year. The first three reasons for visiting a dentist in the last year were for a check-up (22.5%), orthodontic treatment (19.6%) and fillings (14.5%). The results showed all of the students had a tooth brush; 19.6% of them brushed their teeth once a day while 71.7% at least twice. The toothbrush changing interval was every three months in only 44.9% of the students. 84.1% of the students used adult toothpaste, and two-thirds used pea-size quantities. Only 12.3% of the students rinsed their mouth with tap water less than 3 times after tooth brushing. The proportion using a toothpick, dental floss and mouth rinse were 37.0%, 32.6%, 29.0% respectively. **Conclusions:** The level of "good" oral health habits of the study subjects was not at a desirable level.

### No. 1849 - Odontoday: a prevention and epidemiological project of public health in children from Sardinia

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**Aim:** The aim of this project was to evaluate Odontoday, a multi-year dental prevention project carried out in Sardinia. The aims were to educate families about the importance of dental care, to perform frequent checks to prevent oral diseases and promote a correct and healthy lifestyle among students. **Methods:** With agreement with the city council of Cagliari and the ethics committee of the University Hospital of Cagliari, the students of primary and secondary schools of the city were involved from 2008. Data collection was carried out to WHO criteria (1997). Only children who returned a written consent form signed by parents and guardians were examined. A random sample of 27 (of 110) schools were involved. **Results:** The children were analysed in two groups: group A (n= 692 subjects at age range of 4-6 years) and group B (n=247 subject 7 to 15 years). The CPI was compared with the DMFT. Comparison of quantitative variables among groups was carried out using one-way analysis of variance (ANOVA). To avoid the attenuating effect of unequal variability among groups on the value of t, a square root transformation was performed when the response variable was a count [Fleiss, 1986]. In the younger age group an association bet-

ween CPI and caries was observed: at CPI = 0 dmft was 0.58 at CPI = 1 dmft was 0.93 and at CPI = 2 dmft was 1.42 ( $p < 0.01$ ).

**Conclusions:** The present investigation describes the oral health status in Sardinian children population; the data observed demonstrate the importance of a preventive educational program for schoolchildren and the need for the comprehensive prevention of dental caries.

### No. 1850 - Caries increment on adjacent approximal surfaces and effectiveness of fluoride applications

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**Aims:** To explore the likelihood of caries increment in permanent first molar teeth adjacent to distally decayed primary second molar teeth and evaluate the effectiveness of preventive applications. **Methods:** The Project was approved by the ethics commissions of both ministries of Health and Education of the country and consent was gained from all schools involved in the study. This randomised controlled clinical trial which ran over five years was supervised, structured brushing with fluoridated toothpaste everyday, fluoride rinsing (0.02%) weekly for all children, then in addition a four times per year neutral fluoride gel application for high risk children in primary schools of Bilecik City, Turkey. An eight level caries diagnosis system was used. Clinical examinations were performed at three and five years after baseline. 10,287 paired permanent first molars' mesial surfaces and primary second molars' distal surfaces were in the experimental group and 1944 paired surfaces were in the control group of 1021 children between ages 6/7 to 10/11 years. They were analysed for possible caries increment by Chi-Square test. 1229 distally decayed surfaces of primary second molars and the adjacent surfaces of permanent first molars were analysed for preventive intervention by One-Way ANOVA –Tukey. **Results:** Baseline caries distribution was not statistically different between test and control. The results showed that the presence of caries on primary second molar's distal surfaces significantly affected the increment of caries on the corresponding permanent first molar's mesial surfaces in three examinations, in both the mandible and maxilla, in low risk and 7-11 years age group and in girls. Preventive measures significantly decreased caries progression by three and five years. **Conclusions:** Decayed primary second molars' distal surfaces increase the risk of developing caries on the permanent first molars' mesial surface. In this study this was avoided through a prevention programme in primary schools targeted at high risk groups.

**Methods of funding:** The study was supported financially by WHO Europe. All the authors declared no competing interest.

### No. 1851 - Changes of Dental care utilization after elementary school oral survey in Korea

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**Aim:** The aim of this study was to analyze the changes of dental care utilization after elementary school dental examination in Korea. **Methods:** The subject was 299 elementary school students of 12 years old (5th degree, male: 50.5%, female: 49.5%) by cluster sampling. In 2009, well trained three dental hygienists examined their oral health status and surveyed structured questionnaire related oral health care (including dental care utilization). After a year, we surveyed the same subjects (13 years old, 6th degree) about dental care utilization. Collected data were analyzed into Chi-square test and Independent t-test using PASW 18.0K program. **Results:** 1. In 2009, 56.4% of the subjects were reported they received school oral health education during last one year, and 75.6% of them in 2010. 2. Dental care utilization rate in 2009 was 86.6% and 88.6% in 2010. The largest reason visiting dental clinic in 2010 was oral examination (55.5%), the second was tooth pain. They did not visit dental clinic because they had whole sound tooth. 3. The subjects' decayed teeth did not use dental clinic was 1.1 in 2009 and it was decreased to 0.9 in 2010. 4. In 2009, dental care utilization rate was 84.0% in the guardian's education level was low and the rate was decreased to 79.2% in 2010. On the other hands, in the group of high education level, the rate was increased from 85.7% in 2009 to 88.8% in 2010. **Conclusions:** After school dental examination, most elementary students utilized dental clinic for oral examination and decay treatment. In addition, the guardian's education level was related to dental visit of the elementary students. It would be necessary to define variables of socioeconomic status affect dental care utilization in elementary students.

### No. 1852 - Kano Test for Social Nicotine Dependence Applied to Romanian Dental Students

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**Aims:** The aims of this study were to assess the association between age, gender, smoking status, relationship with smokers and "the Kano Test for Social Nicotine Dependence" (KTSND) scores, in a sample of Romanian dental students. Smoking habit is due to psychological and physical dependence. Psychological nicotine dependence can be assessed with "the Kano Test for Social Nicotine Dependence (KTSND)". **Methods:** A cross-sectional study of 198 volunteers dental students, aged 18 to 37 years ( $21.3 \pm 2.6$  years), was conducted at University of Medicine and Pharmacy of Iasi, Romania, Faculty of Dental Medicine. Self-administered questionnaires including the KTSND questionnaire, which is composed of ten questions with a total score of 30, smoking status, and stages in quitting smoking only for current smokers were distributed among dental students from October 2010 to February 2011. This study was approved by the Ethics Committee of our university. SPSS 19.0 was used for data analysis. **Results:** The sample included 72 smokers (36.3%), 14 ex-smokers (7.1%), and 112 non-smokers (56.6%). The total KTSND score was  $10.9 \pm 5.7$  in this sample. According to smoking status, the KTSND scores were  $16.6 \pm 6.9$  in smokers,  $13.9 \pm 6.7$  in ex-smokers, and  $10.1 \pm 6.1$  in non-smokers. Smokers' and ex-smokers' KTSND scores were significantly higher than those in non-smokers ( $p < 0.05$ ). Male students demonstrated higher KTSND scores than female students ( $11.4 \pm 6.3$ ;  $10. \pm 5.2$ ,  $p < 0.05$ ). Concerning "the stages for quitting smoking, the total KTSND scores were significantly different among 4 groups:  $22.2 \pm 6.1$  for those unwilling to quit,  $19.5 \pm 3.7$  for pre-contemplators,  $36.1 \pm 3.4$  for contemplators and  $22.2 \pm 5.4$  for preparers. **Conclusions:** The prevalence of smoking in Romania was lower among dental students (36.2%) than in the general po-



pulation. The total KTSND score assesses the stages for quitting smoking (those unwilling to quit, pre-contemplators, contemplators and preparers) in order to actively change to new healthier behaviour.

**Methods of funding:** This study was supported by Romanian National Centre for Scientific Research, 42123/2008 research Project.

### No. 1853 - Snack intake and tooth brushing in Korean elementary students

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**Aims:** The aim of this study was to analyse Korean elementary students' snack intake status and tooth brushing habits. **Methods:** The subjects were 358 elementary students of 5th grade in 2009 (Male: 50.6%, female: 46.2%), 613 of 6th grade in 2010 (Male: 52.8%, female: 47.2%). The students were in three elementary schools in Wonju, Gangwon province and it was the same in both years. Snack intake and tooth brushing status was investigated by questionnaire in 2009 and 2010. Eating frequency and type of snack products and tooth brushing after snack intake between 2009 and 2010 was compared. Collected data were analysed into Frequency analysis and Chi-square test using PASW 18.0K program. **Results:** 1. The subjects were mostly eating between meal (once a day) in 2009 (39.1%), 2010 (37.0%). 2. The snack most frequently intake was fruits and vegetables (33.0%), candies and cookies (22.3%) in 2009 and candies and cookies (26.3%), fruits and vegetables (24.1%) in 2010. 3. Tooth brushing after snack intake was decreased from 28.8% in 2009 to 20.6% in 2010. 4. The main reason they did not do tooth brushing after snack intake and lunch time in school was annoyingness both 2009 (38.0%) and 2010 (36.7%). The second reason in 2009 was a lack of facilities (15.6%) was placed drop to 6th reason in 2010 (1.6%). **Conclusions:** In order to prevent dental caries of elementary school students, we need to educate them in healthy snack selection and tooth brushing after snack intake. It also required that providing motivation about importance of tooth brushing after snack intake and lunch time.

### No. 1855 - Developing Salford Bright Smiles Dental Health Campaign

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**Aim:** To produce an evidenced-based and theoretically evaluated dental health campaign to improve dental access for 3-5 year old children in a deprived urban environment. **Methods:** Six qualitative focus groups and 4 interviews were conducted with parents (n=39) to identify key barriers and facilitators to dental access so the intervention could be tailored to the population to which it would be exposed. Salford primary schools were used as the sampling frame; seven were selected based on a cross-section of socio-economic status. Participants were recruited by a member of school staff who advertised the study within the school and written informed consent was obtained from each participant. The interviews were transcribed and framework analysis undertaken using NVivo8. A second stage was to evaluate children's story books around dental visits using a behaviour change taxonomy (Michie et al. 2008). All relevant story books, currently in print were included. A Delphi technique was applied to this exercise. A third stage will be evaluation of the campaign using the Health Action Process Approach (Schwarzer 2001). Ethics approval was granted by the University of Salford ethics committee. **Results:** Several barriers and facilitators to accessing dental services for their children emerged from the parent interviews. These were levels of awareness around dental services and risks, parental self efficacy, parent and child anxiety and level of trust. Four story books have been analysed to date. Initial results suggest these books display some behaviour change techniques although the strength may not be enough to affect behaviour. The books present non-evidence based dental messages. **Conclusion:** Many parents are subject to a variety of psycho-social factors which act as barriers or facilitators to child dental attendance. There is a lack of available evidence-based materials to support access. Campaigns around access must integrate evidence with behaviour change theory for lasting impact.

### No. 1857 - Prevention in Kindergartens with 500 ppm Fluoride Toothpaste - A Randomized Clinical Trial

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**Aim:** The aim of the present study was to evaluate the effect of an intensified preventive program in kindergartens. Caries is still a major problem in preschool children in Germany. **Methods:** 2,228 children aged 2-4-years in kindergartens in two counties in Northern Hesse were randomly allocated to two groups. Children in the test group participated in daily tooth brushing with 500 ppm fluoride tooth paste which was supervised by specially trained dental nurses. Those in the control group received 3-4 tooth brushing instructions per year. The baseline survey was performed from October 2006 till April 2007, the final examinations between March and July 2009. The study was approved by the ethics commission of Philipps University Marburg and informed consent was obtained from parents. Caries experience was recorded using WHO (1997) criteria. The statistical evaluation was performed by means of the software package SPSS 17.0. To compare the mean dmft values of the test and control group Mann-Whitney U-Tests were performed. **Results:** 2,144 Children (test group: 1,096, control group: 1,048) participated in the final examinations. The mean caries increment in the test group (dmf-s=1.55) was 24% lower than the increment in the control group (dmf-s=2.02, p=0.043). Based on dmft values the corresponding figures were 0.79 for the test group and 1 for the control group (p=0.44). High increment values (dmf-s >7) were observed in the control group twice as often than in the test group. **Conclusion:** The results of our study show that an intensified preventive program in kindergartens based on supervised daily tooth brushing has a positive effect on dental health of preschool children. **Methods of funding:** Supported by GABA International.

### No. 1858 - Self-reported oral hygiene practices among young adults in Italy

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**Aims:** To analyse gender differences in reported self-care practices (oral hygiene habits), dietary habits, dental visiting habits and behavioural habits in Italian University students. **Methods:** A cross sectional study of students attending the university canteen in seven different Universities (Rome, Milan, Bari, Sassari, Perugia, Naples, Pisa). Respondents self consented. Data were collected on 2,250 individuals (5.2% of the total students and 18% of the number of meals daily served by those canteens), 1,181 females (52.5%) and 1,069 males (47.5%) by means an anonymous self-administered questionnaires including items about oral hygiene status and oral health behaviour. Overall, 152 questionnaires (6.7%) were discarded because of missing data for gender. The first two steps of data statistical analyses were to verify the relationship between independent variables through bivariate analyses against the outcome, gender, through stepwise logistic regression models. Finally, the model was stratified in three different age groups (18-20 years (n=604); 21-23 years (n=781), >23 years (n=418)). In the stepwise procedure a significance level of 0.20 was set to remove variables from the model and 0.10 to insert variables. Data were processed and analyzed with STATA9; all tests were considered significant at alpha < 0.05 level. **Results:** In bivariate analysis gender (females more likely to report the habit) was significantly associated with daily Toothbrushing Habits (TH), Toothbrushing Habits after each meal (THM) and with the use of instruments for oral hygiene (p<0.01). Males devoted more time (minutes) to oral hygiene (2.04 vs 1.99) and females reported having more snacks after meals, albeit neither were statistically significant (p=0.12 and p=0.08, respectively). Stepwise logistic procedure selected, as predictor variables for Males vs Females, the number of visits to the dentist (OR=1.07, 95%CI:1.00-1.16) and time devoted to oral health behavior (OR=1.16, 95%CI:1.02-1.32). In contrast, TH tended to be less frequent among males (OR=0.37, 95%CI:0.15- 0.9), also when stratified for age (18-20 years: OR=0.78, p=0.001; 21-23 years: OR=0.72; p=0.03; >23 years OR=0.51; p=0.003). **Conclusion:** Variation in reported oral hygiene behaviour and attitudes are present in young Italian university students with significant gender differences. A program of oral health education could be implemented through gender-oriented strategies to improve oral hygiene practices of the population.

### No.1859 - Health Promoting Schools, Oral Health Multimedia Project in primary schools in Italy

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**Aim:** Health Promoting Schools teaches students about knowledge, attitudes and values that guide them to make health-oriented choices. This project aimed to test the effectiveness of a multimedia game designed for elementary school children to teach basic concepts of oral health and use the instrument to identify students' knowledge. **Methods:** A specially designed multimedia game on oral health was administered in computer classes, before (T0) and after (T1) an educational stage, to 1300 third (8-9 years) and fifth graders (10-11 years) of elementary schools in two provinces of medium-small cities in Central Italy (Terni and Latina). The test was anonymous and there was no need for ethical approval. Informed parental consent was collected before the first administration. The schools included urban and rural areas of the two provinces. The statistical test used was the non-parametric Wilcoxon signed- rank test. **Results:** Response rate was 90.6% (due to absence on the game administration date). Of 1300 students tested the average percentage of the correct answers was 40.7% before oral health lessons and 59.2% afterwards. On the whole there was an improving trend of correct answers from T0 to T1, which was significant (p < 0.05). Best results were for fifth graders (+ 17.5%), extended school time schedulers (+18.1%) and females (+18.9%). However, the results show poor overall Oral Health knowledge, the total of correct answers achieved was below 60%. These data are even more worrying, given the simplicity of the questions. **Conclusions:** The school has proved an ideal environment for this oral health promotion project, both for the catchment area, and for efficiency and speed of child population screening. The results stress the importance of the school environment for access to health services for all socio- economic classes. Creating a game with multimedia features has proved a valuable tool to attract the attention of children in an era where technology influences mass communication.

### No. 1860 - Infection control in the dental offices in Moldavia – Romania. Prevention and management

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**Aim:** The study evaluated dentists' compliance to protocols for the prevention and management of infection transmission in the region of Moldavia, Romania. Infection control and safety in the dental office represent an essential part of modern dentistry. **Methods:** The ethics approval and consent was given by the Ethics Committee of the University of Medicine and Pharmacy from Iasi, Romania. It was a cross-sectional study in the 6 counties of Moldavia during January and February 2011. The study sample was representative of age, gender and years of work experience and included 115 dentists aged between 26-62 years. Information was gathered using a 21-item questionnaire containing questions with one or with many possible answers. Data were statistically analysed using the SPSS 14.0 program and compared with the chi-square test (p < 0.05). **Results:** 73.0% of the subjects stated that infection control influences their clinical decisions. The concern for infection prevention was found to be higher in female subjects and in the 35–45-years age group (p < 0.05). Half of the investigated practitioners (50.4%) reported that they work with a dental assistant and 83.4% of the subjects that they are periodically tested for blood-transmitted diseases. Most of the dentists (80.8%) use dry heat (Poupinel) for sterilisation, 65.2% use wet heat (Autoclave) and 8.7% use other methods of sterilisation. High percentages of dentists (88.7%) consider that the equipment for individual protection of the dental team should be the same and complete, irrespective of the patient's medical status or required dental treatment. 98.9% of the dentists use latex gloves, 98.6% wear a protective mask and 53.9% wear protective glasses. Hand hygiene is performed for 1 minute before patient treatment by 67.6% of the respondents. Almost one third (28.1%) use ultraviolet sources for air decontamination and only 21.1% use germicide agents for the dental unit water decontamination. **Conclusion:** Knowledge about

infection control is widespread, but not yet universal in Moldova. Extended programs are necessary to promote infection risk and to induce compliance with infection control methods for the effective prevention and management of infection transmission in the dental office.

**Methods of funding:** This research was supported by the European Project „Ergonomics, prevention and performance management in dental medicine by adopting European standards” Contract: POSDRU/81/3.2/S/55651, 2010-2013 – Project funded by European Social Fund “Invest in People”.

### No. 1861 - Denture-cleaning habits of a group patients

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**Aim:** The aim of this study was to determine the denture-cleaning habits of a population group who were selected randomly from those attending a hospital for oral care. **Methods:** 200 volunteer denture-wearing patients were included in this study. These patients were randomly selected from the patients who had been referred to the dental service of the GMMA Haydarpasa Training Hospital, Ankara, Turkey for any oral treatment. Types and frequency of use of denture cleanliness were determined by questionnaire. Patients completed their questionnaires and returned them at the end of their appointment. Removable dentures were classified as clean, dirty or extremely dirty based on the level of debris and stain present. **Results:** Seventy six (38%) of the patients were cleaning their dentures at least once a day. Women were cleaning them more frequently than men. Generally the older the dentures the more dirty they were. **Conclusion:** The findings of this survey revealed that a large number of people do not know how to clean their dentures effectively.

### No. 1862 - Migrant oral care needs: public health service vs. charitable organization, Rome

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**Aim:** To provide an accurate profile of cultural diversity in customs and needs for dental care among immigrants in Rome, Italy. Collecting data on immigrant populations and their health needs is crucial, in order to develop effective care delivery. **Methods:** A questionnaire was used between September 2006 and March 2007, for out-patients, at their first visit to two primary oral health care clinics (national public health service - NPHS and a charitable organisation - CO) in Rome. Socio-economic status (SES), access to general and oral health care and OHRQoL were assessed. Illegal immigrants were classified where they did not have a personal identification card. Verbal consent of respondents was recorded. Permission of the Director of the Department of Stomatology and Dental Clinic Caritas was given for the collection of data. **Results:** The sample consisted of 250 subjects (144 Italian and 106 non-Italian). 100 out-patients of the CO and 150 of NPHS. Immigrants made up 81% of the CO sample and 16% in the NPHS sample ( $p < 0.001$ ). Overall, women represented 57% ( $N = 144$ ) of respondents. Patients attending the CO were significantly younger than those at the NPHS ( $p < 0.001$ ). The measures of SES showed significantly lower integration and more unemployment among CO patients, who also lacked information on access to care and more precarious employment, residential (10% homeless) and legal status. Almost all migrant patients had suffered from a dental problem in the last year. **Conclusion:** Illegal immigrants prefer to access dental care provided by a voluntary organisation as it offers assistance, bypassing bureaucracy. Although access to health care by those who do not comply with the rules on residing in Italy should not require the presentation of documents or be reported to the authorities. Immigrants who use the NPHS are generally more integrated, and have been living in Italy for more than 5 years. Predictably, for immigrants, oral health is a low priority, and this should be regarded as a public health issue.

### No. 1863 - Dental erosion in patients with gastro-esophageal reflux (GERD)

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Gastroesophageal reflux disease (GERD) occurs when gastric juice acidifies the mouth on a regular basis leading to a loss of mineralised tooth tissue. **Aim:** To evaluate the risk of dental erosion in people with GERD and relate erosion to reported variables collected by questionnaire. **Methods:** A sample, composed of a group of patients over 18 years with GERD and an asymptomatic control group, was interviewed and examined for the evaluation of the Basic Erosive Wear Examination (BEWE), a questionnaire on symptoms of GERD and an interview for the determination of caries risk through Caries Management By Risk Assessment (CaMBRA). The control group was patients presenting for the first dental visit at the Outpatient Department of the Policlinico Umberto I. Permission for the collection of data was obtained of the Director of the Department of Stomatology, Departments of Endoscopy and Surgery Hospital “Alfredo Fiorini” Terracina and Hospital “San Giovanni di Dio” of Fondi. Salivary pH was measured using litmus strip in a commercial kit. **Results:** 214 subjects of mean age 27 were equally divided by sex and age in the two experimental groups (control,  $n = 107$  and GERD,  $n = 107$ ). A statistical correlation was shown for the GERD group, level of risk of “severe” dental erosion (60% of those with GERD, 3% in the control group) and a diet rich in acidic foods and beverages. Acidic dietary habits with an average frequency of 3 times a day was present in the GERD group with a rate of 6%. A diet low in fatty foods was prevalent in the control group (63% in control vs 48% in the GERD). The difference in salivary pH was highly significant for all variables. The GERD group has increased prevalence and severity of dental erosion. The pH of plaque and saliva were significantly correlated to dental erosion. The medical history and salivary factors showed a correlation with the level of caries risk. **Conclusion:** GERD emerges as a risk factor for dental erosion. Moreover it was noted that the GERD group has dietary habits that could increase acidity symptoms. It is therefore necessary to establish protocols for screening and counselling for prevention and management of dental erosion in patients with GERD.

### No. 1864 - Claims for treatment of dental injuries in the Finnish Patient Insurance Centre in 2002–2006

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**Aim:** The aim of this study was to describe trends in claims for the treatment of dental injuries handled by the Finnish Patient Insurance Centre between 2002 and 2006. Specifically, the number and proportion of compensated and not compensated dental injury claims in the public and private sectors were analysed. The Patient Injuries Act has been in force for two decades in Finland. The Patient Insurance Centre handles compensation procedures for all patient injuries that take place. **Methods:** The International Classification of Diseases (ICD-10) was used to group diseases. Specialist dentists examined all the treated cases for which decisions were given, including patient claims, dentists' reports and accessible radiographs. The background variables assessed included the working sector of the dentist (public/private), as well as the patients' age and gender. The Chi-squared test was used for comparisons. **Results:** Between 2002 and 2006 there were 3,233 dental injury claims with decisions. The number of such claims increased from 561 in 2002 to 644 in 2006 while the proportion of compensated cases decreased ( $p < 0.01$ ). Compensation was paid to the patient in 44% of the cases. In 27% of the cases no patient injury was observed, and in 28% the injury was not avoidable or of a minor nature. A majority of the compensated cases were treated in the private sector (69%). The number of compensated cases increased over time (from 28% to 36%) in the public sector and among those under 19 years. **Conclusions:** The number of claims for the treatment of dental injuries has increased significantly in Finland. Almost half of the patients with treatment claims were compensated by the Finnish Patient Insurance Centre. The number of compensated cases has increased in the public sector.

### No. 1865 - Changes in the oral health of Dental students in Iasi, Romania (2005-2009)

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**Aim:** The aim of this study was a retrospective analysis of oral and dental health (ODH) of students of the Faculty of Dentistry Iasi (FMDI). **Methods:** The study was conducted over a period of five years (2005-2009) during which students in the third year of their studies were invited to participate. In total 332 students (67% female and 33% male), students with an average age of 22.7 years took part. Permission for the study was obtained from institutional ethical committee and the participants gave written, informed consent. The study was conducted by dentists previously calibrated according to WHO (1997) criteria. Assessment was made of oral- Hygiene-Index(OHI); Quigley-Hein(QH); O' Leary; Approximal-Plaque- Index(API); DMFT=Decayed-Missing-Filling-Teeth; DMFS=Decayed-Missing-Filling-Surfaces; Community-Caries-Index-Treatments-Needs (CCITN); Community-Periodontal-Index-Treatments- Needs(CPITN); Sulcus-Bleeding-Index(SBI); Orthodontic-Index-Treatment-Needs(IOTN). The study was retrospective and from clinical records. The data were statistically analysed using SPSS 14.00 and the Chi-square test with the significance level set at 95%. **Results:** Analysis of data showed a constant value for OHI, increasing values for QH: O' Leary and API ( $p < 0.05$ ), decreasing values for DMFT = 9.11 (2009)  $p < 0.05$ , increasing values for CCITN (8% CCITN1; 3% CCITN3:1 ; 6% CCITN 2:2), CPITN (3% CPITN2 ; 25% CPITN1,  $p < 0.05$ ) and IOTN to 7.1% (2009) compared to 2% (2005) and a decrease in IOTN4(2009) to 10.71% of subjects( $p < 0.05$ ). **Conclusions:** The results of the study indicated increasing levels of oral health in dental students in Iasi from 2005 to 2009.

### No. 1866 - Supernumerary teeth in children referred to gulhane military medical academy

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**Aim:** The aim of this study was to investigate the frequency, distribution, sex difference, and characteristics of supernumerary teeth in a referred Turkish population. **Methods:** In this retrospective study, panoramic radiographs of 1126 patients, who were referred to the departments of paedodontics or orthodontics during 2009 or 2010, were evaluated. The children in the mixed dentition whose age was between 7- 12 were included to the study. Number, location, classification, side, and impaction of supernumerary teeth were recorded. **Results:** 57 supernumerary teeth were found on 49 of the radiographs. Mesiodens was the most frequent supernumerary tooth (49.1%, N = 28). This was followed by the mandibular premolar (17.5%, N = 10), the maxillary lateral incisor (15.8%, N = 9), the maxillary canine (7.01%, N = 4), the maxillary premolar (5.3%, N = 3), and deciduous second molar (1.8%, N = 1). 37 (64.9%) of the supernumerary teeth were impacted. 43 supernumerary teeth (75.4%) were in vertical position while 10 (17.5%) were mesially and 4 (7.01%) were distally angulated. In 12 patients (24.48%), supernumerary teeth caused impaction of permanent teeth. In 9 patients one of the maxillary central incisors was impacted, in 2 patients both of maxillary central incisors were impacted, and in one patient one mandibular first premolar was impacted. The male-female ratio was 26:23 and it was statistically insignificant ( $p > 0.5$ ). **Conclusions:** In this study, the number of supernumerary teeth in Turkish children who referred to the departments of paedodontics or orthodontics in years 2009 and 2010 was 57. Since some supernumerary teeth cause several problems, the clinician should take appropriate measures even at early ages. This might reduce the need for future orthodontic treatment.

### No. 1867 - The relationship between salivary 8-OHdG biomarker and clinic periodontal status

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**Aim:** The aim of the present study was to establish any correlation between clinical periodontal status and salivary levels of 8-hydroxydeoxyguanosine (8- OHdG). Previous work has demonstrated a correlation between salivary markers of oxidative stress and periodontitis. **Methods:** The study group consisted of 355 adults (35-44 years) randomly selected ; clinical examination assessed depth of periodontal pockets, bleeding on probing, and plaque and was made in the clinical department of the Faculty of Dentistry Constanta. After clinical evaluation subjects were divided into 3 groups: 252 (71%) with chronic periodontitis, 16(4.5%) aggressive periodontitis, 87 (24.5%) healthy subjects. Saliva samples were collected in sterile containers and stored at -80°C/730C

until analysis. ELISA competitive method (Cayman Chemical, USA) was performed for assay of salivary 8-OHdG biomarker. Statistical analysis was performed using SPSS 14.0 for Windows and MedCalc 11.3.0. Statistical analysis was performed using Students t-test. Ethical permission was given by the Professional Ethical Committee of Ovidius University and written consent from patients was obtained. **Results.** The salivary 8-OHdG levels of healthy subjects was  $1.58 \pm 0.22$  ng/mL, in the chronic periodontitis group it was  $5.88 \pm 0.62$  ng/mL and in aggressive periodontitis patients  $7.33 \pm 2.72$  ng/mL. The study demonstrated a correlation between the levels of 8-OHdG and the type of periodontal disease in all the study groups ( $p < 0.001$ ). There were significant differences in the mean value of the salivary levels of 8-OHdG in chronic and aggressive periodontitis compared to the healthy subject ( $p < 0.001$ ). There were no significant differences between the gender and the levels of 8-OHdG in all groups ( $p > 0.05$ ). **Conclusions.** The results showed that the salivary level of 8-OHdG could be a useful biomarker of healthy periodontal status and for the early diagnosis of periodontitis.

#### No.1868 - Creating guidelines for improving oral health in French elderly

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The research literature shows that institutionalised older people present with poor oral health in most countries. This is mainly due to a low level of oral hygiene. Although health care workers are trained and aware of the importance of oral hygiene in oral disease prevention, they do not put this knowledge into practice on a daily basis. Furthermore, oral hygiene is frequently considered a low priority in the patient's care as it is not seen as an integral part of the body's hygiene. **Aim:** The aim was to evaluate the knowledge, the behavior and the practice of the health care personnel in regard to oral hygiene in two countries. **Methods:** In France and Austria, research was carried out in nursing homes, for dependent elderly patients. Following this research in order to identify the barriers to overcome in oral hygiene, discussions were started between dentists, gerontologists and health care personnel from French and Austrian Universities. These discussions, among health care professionals, resulted in the elaboration of a guideline for the oral health on elderly people and its establishment on the geriatric unit at the Louis Mourier hospital in France and nursing homes in Austria. **Results:** The results confirmed those found in the literature. The main objectives of the guidelines are to raise awareness and inform the health personnel about the good practices on oral care for the elderly, sensitise them to the relationship between the quality of oral health and general health, instigate the nursing home directors to promote better quality in oral hygiene and to set up adapted protocols of oral hygiene for the patients. Moreover, oral care must be an integral element of the patient's general care to obtain, in the long term, an improvement of the oral health status and the quality of life of the institutionalised old people.

**Methods of funding:** We thank the continued support of GABA France.

#### No. 1869 - Lactobacillus and mutans streptococci levels in South-East Estonian primary school pupils

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Introduction: Caries prevalence in South-East Estonia is high (low socioeconomic level and the low fluoride concentration in drinking water). The average DMFT index of 12-years-old children in Estonia was 2.7 (WHO 1998) but in the south the value is significantly higher (DMFT 7-8). In dental caries risk evaluation, Streptococcus mutans and Lactobacillus sp. detection in saliva is a good predictor of caries development. **Aim:** The aim of this study was to collect data on streptococci and lactobacilli counts in stimulated whole saliva in Estonian primary school children, aged 7 to 8 years. **Methods:** The study included 10 randomly selected schools (485 children) from South-East Estonia. The Ethical Committee of the University of Tartu approved the study and written consent for examination was obtained. Data analysis was carried out using the SPSS 18.0 (Spearman's correlation coefficient). The clinical examination using ICDAS completed by four calibrated examiners (surface- and tooth-based weighted kappa  $> 0.9$ ). The levels of mutans streptococci and lactobacilli in the examined subjects were measured using the Dentocult SM and Dentocult LB dip-slides (Orion Diagnostica, Finland) and paraffin-stimulated saliva samples. Results were rated from 0 to 3 (SM) and from 0 to 6 (LB). **Results:** The mean age of the children was 8.3 years (SD=0.6). The non-response rate was 7% (n=37). The mean caries experience was 0.9 (DMFT) and 2.0 (DMFS) among the first graders, and 1.1 (DMFT) and 2.1 (DMFS) among second graders. The Lactobacillus prevalence was 91.9% and Streptococcus mutans 84.9%. The mean rate of Lactobacillus was 4.4cfu and Streptococcus mutans 1.8cfu. There was no statistically significant difference between girls and boys. There was a statistically significant correlation between DMFT and microbial levels. **Conclusion:** Previous studies have shown that persons having high Streptococcus mutans levels in the saliva are at risk of develop dental caries. The results of the study demonstrated high levels of Streptococcus mutans and Lactobacillus associated with caries experience. These findings are consistent with high caries figures in the region.

**Methods of funding:** Cargill R&D Centre Europe grant for this study is appreciated.

#### No. 1870 - Effect of fluoride varnish on dental caries among 12 years old children in Tirana, Albania - A proposed study

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The aim of this study will be to measure the effect of fluoride varnish application on dental caries among 12 year old children in Tirana, Albania. Dental Caries is a major oral health problem in Albania. Previous data for the age group of 12 years old indicated that only 15% are caries free, the mean DMFT = 3.1 and about 60% was untreated caries. No. previous preventive program had been implemented in Albania. The research was designed as a prospective case control study with a cluster sampling technique. Schools (n=8) were selected randomly based on a list given by the Health Authority of Tirana. Four schools

were selected as the experimental group (n= 306 , 6th grade) 45.4% female, 54.6% male and another four as a control group (n=395, 6th grade) 45.3% female, 54.7% male, taking in consideration their location and access. Written permission was obtained from the Ministry of Education and Science, school authorities and parents. Training and Calibration was carried out for the 3 examiners and 3 assistants concerning dental examination, varnish application, registration and record keeping. They followed WHO 1997 criteria. Clinical Examination and a dental examination form were completed at baseline for each participant in the experimental and the control groups. Varnish application was performed only in the experimental group with a frequency of every 6 months. Caries was recorded based on surface DS (decayed surface), DMFS. At baseline the DS = 2.3 (+/-2.59), DMFS = 3.6(+/- 3.18) for the experimental group and DS = 2.3 (+/- 3.4), DMFS = 4 (+/- 4.11). After two years the final dental examination will be carried out and the final data will be recorded. All data obtained from both groups will be processed in the statistical program (SPSS 18) with the aim of confirming or not the effect of fluoride varnish in caries reduction. If it works it will be utilised by the Dental Public Health Service to all Albanian schools.

**Methods of funding:** The Ministry of Health of Albania, General Health Authority of Tirana, and Albanian Dental Association are funding the study.

### No. 1872 - Tooth brushing in adolescents in school environment: a 4-month cohort study

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**Aim:** To analyse the effectiveness of tooth brushing for adolescents in a school environment. In many countries, a decline in caries prevalence has been achieved through tooth brushing with fluoride toothpaste, however, tooth brushing requires patient motivation and collaboration. Schools are considered to be an ideal environment for health promotion programs. **Methods:** At baseline, 123 randomly selected 13-14 year-old adolescents in all 18 schools in Gulbene Municipality (74% response rate) began the study, which was approved by the local Ethics Committee. Data, which included patient interview and clinical examination (caries at D1 level, using ICDAS) were collected with informed consent, and 108 were examined after 4 months (87.8% follow up). There were 38 students randomly selected for the test group, while 70 students made up the control group. Examinations were carried out by one examiner in school classrooms using a mobile light unit. Blinding wasn't performed. The data were checked for normal distribution by the Kolmogorov-Smirnov test. To compare the data, a t test or Mann-Whitney U test were used ( $p < 0.05$ ). **Results:** At baseline there were no statistically significant differences by gender, age and initial caries experience between the test and the control groups. By four months the DMFT index increased from 6.92 to 7.42, but the mean Silness-Löe (1964) plaque index decreased from 2.0 to 1.5. There were statistically significant differences (control; test group) by DMFT increment (0.76; 0.55,  $p = 0.003$ ), Silness-Löe (1964) plaque index decreased (-0.37; -0.78,  $p = 0.001$ ) and tooth brushing frequency ( $p = 0.007$ ). Students from the intervention group attended a dental hygienist ( $p = 0.011$ ) and dentist ( $p = 0.005$ ) more frequently. **Conclusions:** Providing tooth brushing once per day in school environments resulted in observed improvements of oral hygiene and slower progression of caries in adolescents. Additional tooth brushing provided motivation to brush more frequently at home and to attend dentists and dental hygienists more frequently.

**Methods of funding:** The study was financially supported by European Social Foundation.

### No. 1873 - Behavioural change models in oral health promotion: an introduction to a new theory

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**Aim:** The aim of this study was to review behavioural change models used for promoting oral health and to demonstrate the most frequent situations applied, target groups most benefited, and sustainability of the changed behaviour in inclusive evidence tables. Behaviour change seems to be a difficult task. Many articles have been written on cognitive models and theories in order to change oral health behavior in individuals or in a community. **Methods:** MEDLINE, COCHRANE and Google Scholar were searched with keywords; "behaviour" and "oral health promotion" on March 2011 (from 1966 to 2011) and limited to English and Persian language. The inclusion criteria were; individual and community model based interventions, systematic reviews and RCT type studies with follow up of more than six months. Exclusion criteria were narrative reviews. An indicator for effective behaviour change was considered as at least six months maintenance of learned (new) behaviour. **Results:** In total 144, 48 and 2340 articles were retrieved from MEDLINE, COCHRANE and Google Scholar respectively. Of the 124 relevant studies found according to the inclusion/exclusion criteria; 19 had implemented Health Belief Model, 17 the Theory of Planned Behavior and/or the Theory of Reasoned Action, 13 the Health Locus of Control, 13 precede-proceed model, 30 Motivational Interviewing, 30 stages of change and 2 on a newly introduced theory, Self determination Theory. Most of the studies conducted on "oral health promotion" were not model based. Long term sustainability of single based theory interventions were questionable compared to implementation of combination of theories. Furthermore the best results were obtained in adults (+18 years) compared to adolescents. This highlighted the lack of our behavioural knowledge in affective and cognitive character of this age group. **Conclusion:** It seems that PRECEDE-PROCEED model is the best one regarding behavior change of school children.

### No. 1874 - Insurance status and use of dental services among Iranian population

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**Aim:** The aim of the present study was to determine relationships between insurance status and utilization of dental services. **Methods:** The study was based on cross-sectional data obtained through phone interviews. The target population included adults in the city of Tehran. Using a two-stage stratified random technique, 3,200 seven-digit numbers resembling real phone numbers were drawn; when calling, 1,669 numbers were unavailable (busy, no answer, fax, line blocked). Of the 1,531 subjects who answered the phone call, 224 were outside the target age, and 221 refused to respond, leaving 1,086 subjects in the final sam-

ple. The interviews were carried out using a structured questionnaire and covered characteristics of dental visits, and demographic and socio-economic background. **Results:** Of all the 1,086 respondents, 57% were women, 62% were under age 35, 46% had a medium and 34% a high level of education, 13% were under the poverty line, and 70% had insurance coverage; 64% with the public, and 6% with a commercial insurance. Of those with dental insurance, 54% reported having had a dental visit within the past 12 months. Check-up as the reason for the most recent visit occurred most frequently among those with commercial insurance (28%) compared with those having public insurance (16%) or being non-insured (13%) ( $p < 0.001$ ). Having had two or more dental visits within the past 12 months was most common among insured respondents, when compared with the non-insured (31% vs. 22%  $p = 0.01$ ). The non-insured respondents reported tooth extractions almost twice as frequently as did the insured ones ( $p < 0.001$ ). **Conclusions:** insurance was positively related to demand for oral health care as well as to utilization of services, but to the latter with a minor extent. Policy implications: The findings indicate a clear need to modify dental insurance systems in Iran to facilitate optimal use of oral health care services to maximize the oral health of the population.

**Methods of funding:** This study was funded as part of a Joint Postgraduate Community Oral Health Programme between Institute of Dentistry, University of Helsinki and Shaheed Beheshti University of Medical Sciences.

### No. 1875 - HPV and oral health. Beyond a gender-specific approach

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Anti-HPV vaccine, currently available in Italy, guarantees protection from HPV 16 and 18, responsible for 70% of cervical cancer, and HPV 6 and 11, responsible for benign warts. HPV-related outcomes have only been female gender-linked pathologies. Currently, anti-HPV vaccines has been supplied free in Italy to all 12 years old girls, to prevent cervical cancer. However, some epidemiological research suggests the opportunity to go beyond the gender specificity for HPV, particularly HPV-related oral cancer. An analysis of recent scientific literature suggests HPV-16 is involved as a prognostic risk indicator in patients with squamous cell oral carcinoma (Sugiyama M et al, Br J Oral Maxillofac Surg 2007). Moreover, Scully (Br. Dent. J, 2005) underlines that the incidence of oral cancer is increasing in young adult population, and some cases cannot be explained by alcohol and tobacco, with HPV indicated as the infective agent, particularly for oro-pharyngeal cancer, with pathogenic potential also for ano-genital lesions. Campisi et al (Int J of Oncology, 2007), reviewing literature, showed that, HPV can have a role in the pathogenesis of some oro-pharyngeal cancers. There is no gender predilection for HPV-related oncogenic process in the oral cavity, and any oral surface may be affected. On this basis, perhaps HPV cannot be considered only a female pathogen and that its role in oro-pharyngeal cancer etiology needs to be investigated, with particular reference to prognosis in relation of HPV infection and possible recommendation of vaccine license extension to young males who have not been exposed to HPV.

### No. 1877 - 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  $2.52 \pm 2.16$  in the liver transplantation group and  $0.59 \pm 1.34$  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 programs in these patients.

### No. 1878 - 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/exp/s\\_icalculation.xls](http://www.whocollab.od.mah.se/exp/s_icalculation.xls)). **Results:** In 12 year old children caries prevalence

was 35.8%. Mean DMFT was  $1.17 \pm 1.96$  while SIC was  $3.42 \pm 1.97$ . 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 programs to reduce caries incidence and to promote better oral health level in the Campania region of Italy.

### No. 1881 - 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 & Løe (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  $5.9 \pm 5.9$ . 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.

### No. 1882 - Effectiveness of dental screening for referring children with carious teeth for dental treatment

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**Aim:** This study aimed to evaluate the effectiveness of annual dental public health screening for referring children with carious lesions for dental treatment, by recording changes in dmft/DMFT between the diagnosis of carious lesions and the provision of treatment. **Methods:** Regional Dental Public Health Services (DPHS) are required to provide annual dental screenings. These are done under field conditions for all children attending day care centres and primary schools. Data from 5,049 children screened between 2004 and 2009 was used. 2,051 preschool children aged 2 to 6 attending all 37 day care centres and 3,034 schoolchildren aged 6 to 11 years attending all 15 primary schools around Weimar, Central Germany. Data were analysed using MS Excel, Crystal Reports XI and SPSS 15. Parents gave informed consent before screening. **Results:** In preschool children, mean dmft was 1.2 (SD=2.5) and mean dt was 0.7 (SD=1.7). In schoolchildren the mean dmft was 2.3 (SD=2.6) and mean dt was 0.6 (SD=1.2). Mean DMFT was 0.3 (SD=0.9) mean DT was 0.1 (SD=0.5). Preschool children who had received two screenings showed 19.8% (n=126) fillings in previously carious teeth, 3.8% (n=24) of the teeth were extracted, 5.2% (n=33) presented with trepanation only and 71.2% (n=453) were still diagnosed as carious. In preschool children attending three screenings 27.3% (n=137) of the carious teeth remained untreated. After four screenings there were still 14.9% (n=22) of the teeth without any treatment between the first and the last examination. At the second screening the children had 53.2% (n=592) of carious primary teeth and 49.7% (n=50) of carious permanent teeth untreated. After three screenings 27.6% (n=307) of the primary teeth and 19.3% (n=20) of the permanent teeth were still carious. **Conclusions:** Referring children with carious lesions for dental treatment after oral screening by DPHS in day care centres and primary schools, shows unsatisfactory success rates. Existing approaches to DPHS should be reconsidered in order to enhance uptake of dental treatment.