

# **Abstracts from 22nd Congress of the European Association of Dental Public Health - Challenges in Oral Epidemiology**

**Held in Vilnius 8 - 10 June 2017**

**The first four abstracts, of those that appear below, were selected for Members Oral Presentations, in competition for the GSK EADPH research prize of € 3000. They were not presented as posters.**

**The GSK EADPH Research prize for 2017 was won by Dr Emma Hall-Scullin for her oral presentation of "A longitudinal study of caries incidence and prevalence from childhood through to adolescence."**

**The other abstracts were all accepted for presentation as posters, followed by five minute oral presentations in one of eight sessions, which were on:**

**Oral epidemiology 1 (dental caries in children)**

**Oral epidemiology 2 (dental caries in adults)**

**Health services research**

**Oral health promotion**

**Oral epidemiology 3 ( periodontology and other topics)**

**Oral epidemiology 4**

**Oral health quality of life**

**Other topics**

**The abstracts for these eight sessions appear after the four for members oral presentations and are grouped under the above eight titles**

## Members Oral Presentations from 11.30 on Friday, 9 June 2017

### 3509. Polypharmacy and its Impact on the Oral Health of Nursing Home Residents

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**Aim:** The aim of the study was to describe medication use of nursing home residents, including hyposalivatory medication, and to look for possible associations between medication use and the oral health status of nursing home residents.

**Methods:** This cross-sectional design was approved by the Ethical Committee of the Ghent University Hospital (B670201318461). The study population consisted of nursing home residents from East- and West Flanders, two Belgian provinces from which a non-random sample of 23 nursing homes, belonging to an oral health care network called Gerodent, was obtained. All residents attending the Gerodent mobile dental clinic for a first consultation between October 2010 and April 2012 were included. Consent was obtained from the nursing homes and data were extracted retrospectively from the dental records. For each resident, data on oral health, demographic variables and medication use were collected. Descriptive, bivariate and logistic regression model analyses were performed.

**Results:** The study sample consisted of 1,226 nursing home residents with a mean age of 83.9 years (SD 8.5). The mean number of medications per person was 9.0 (SD 3.6; range 0-23; median 9.0). In the bivariate analyses some associations were found between medication use and oral health of residents with natural teeth: the higher the number of medications (with risk of dry mouth) and the overall risk of dry mouth, the lower the number of natural teeth ( $p = 0.022$ ;  $p = 0.005$  and  $p = 0.017$  respectively). In contrast, as medication intake increased the total treatment need tended to decrease resulting in a higher treatment index ( $p = 0.003$ ;  $p < 0.001$  and  $p = 0.002$ ). The logistic regression model analysis confirmed that the proportion of carious teeth decreased and the treatment index increased with increased medication intake (with risk of dry mouth) and higher overall medication-related risk of dry mouth.

**Conclusions:** In the population studied a high level of medication use was observed including a high intake of medication with a possible hyposalivatory effect and medications influencing dental treatment protocols. The proportion of carious teeth was higher and the treatment index was lower with decreased medication intake (with risk of dry mouth) and a lower overall medication-related risk of dry mouth. Probably this can be explained by the result of a history of oral pathology as reflected by the life-long accumulation of risk factors. The teeth most sensitive to caries were already extracted at the moment of screening for the study.

## 3539. Socioeconomic Inequalities in Oral Health and Health-Related Behaviours: Lithuanian HAPIEE Study

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**Aims:** To assess the (1) prospective association between socioeconomic position (SEP) and oral health (OH) in Lithuanian adults and (2) role of behavioural factors in this association.

**Methods:** Data from the Health, Alcohol and Psychosocial factors In Eastern Europe (HAPIEE) study were used. The study obtained ethical approval from Ethics Committees at University College London and the Lithuanian University of Health Sciences and participants provided informed consent. A representative sample of 7,161 adults aged 45-75 years at baseline (2006-2008), stratified by sex and 5- year age groups, was randomly selected from the Kaunas population register (response rate: 67%). Baseline SEP (education, material deprivation), socio-demographic (sex, age, marital status and possession of household items), general health (long-term health problems and self-rated health) and behavioural (smoking, sugar and alcohol consumption) information was obtained from participants. Self-reported OH outcomes (edentulousness, self-rated oral health (SrOH) and Oral Impacts on Daily Performances–OIDP) were obtained from 5,057 adults through follow-up postal questionnaires in 2012 (response rate: 70.6%). Multivariable logistic regression models assessed the associations between SEP indicators and OH outcomes, sequentially adjusting for demographic, general health and behavioural factors.

**Results:** There were social gradients for edentulism with a higher proportion of edentate at each lower SEP level for both SEP markers ( $p < 0.001$ ), with a more than two-fold increase in the odds of edentulousness between the highest and lowest education categories. Both SEP measures were also significantly associated with SrOH (OR=2.4, 95% CI=1.6-3.7 for the highest deprivation group) and OIDP (OR=2.1, 95% CI=1.3-3.2 for the highest deprivation group). Adjustment for behaviours resulted in small attenuation of the socioeconomic inequalities in edentulousness only but not SrOH or OIDP, with smoking contributing most to this attenuation.

**Conclusions:** Consistent and significant socioeconomic inequalities were observed in the OH of Lithuanian middle-aged and older adults with behavioural factors having a minor role explaining these associations.

## 3550. Accurate Measurement of Enamel Fluorosis in the FACCT Study, Republic of Ireland

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Accurate measurement of the prevalence of enamel fluorosis is challenging but essential in countries with community water fluoridation as a caries preventive method.

**Aim:** To train and calibrate dentists to measure enamel fluorosis using Dean's Index in the FACCT (Fluoride and Caring for Children's Teeth) oral epidemiological study.

**Methods:** Ethical approval was obtained for a training and calibration programme. Ten dentists were trained to use Dean's Index during a 4-day training programme (Sept-2013) and a 2-day training programme in Nov- 2013. Training was led by an experienced (benchmark) examiner who provided training in Dean's Index for previous international, national and regional surveys and comprised small group teaching sessions, discussion of fluorosis images and school-based examination of 12-year-old-children. Additional training to maintain consistency was provided via an online fluorosis training tool and sets of fluorosis images both previously scored by the benchmark examiner. Intra- and inter-examiner reliability were finally determined using the Kappa statistic. Examiners had to demonstrate proficiency and achieve a Kappa score  $\geq 0.6$  (substantial agreement) before fieldwork commenced.

**Results:** During training and calibration, there was substantial agreement for Dean's Index (overall Kappa  $\geq 0.6$ ). In the FACCT fieldwork 2,378 12-year-old-children were examined for fluorosis. Intra- and inter- examiner reliability were each determined for 5% of the sample. For Dean's Index almost perfect intra- examiner agreement was found overall for the weighted kappa (0.8) and substantial agreement was found overall for the unweighted kappa (0.7); at least fair agreement was found for each examiner (0.3-1.0). For inter- examiner reliability, almost perfect agreement was found overall for both weighted (0.9) and unweighted kappa (0.8), and a level of substantial agreement at least for each examiner (0.6-1.00).

**Conclusions:** Indices used to measure oral health are largely subjective. Considerable resources must be expended to ensure that measurement of oral conditions such as enamel fluorosis is valid and reliable.

**Acknowledgement of sources of funding:** A Collaborative Applied Research Grant from The Health Research Board, Ireland (HRB/CARG 34/12), supported by the Dental Services Health Service Executive (HSE), University College Cork (UCC) and the Department of Health, Ireland.

## 3552. Longitudinal Study of Caries Incidence and Prevalence from Childhood through to Adolescence

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**Aim:** To describe the prevalence and incidence of caries in the permanent teeth in a cohort of children over a seven-year period, with a view to establishing the pattern of caries development. Of particular interest was the disease trajectory of dentinal caries in the permanent teeth in groups defined by the presence or absence of dentinal caries in the primary teeth.

**Methods:** All pupils in Year 3 (aged 7 to 9 years) at state-funded primary schools in an area in the North-West of England in February 2006 were invited to take part. Intra-oral examinations, to assess oral health, were performed at four time points by trained and calibrated dentist examiners using a standardised, national diagnostic protocol. Positive consent was obtained. The study was included on the NIHR UK Clinical Research Network Study Portfolio (Ref: 10315) and ethical approval obtained (UK National Research Ethics Service Ref: 11/NE/0006). A population-averaged model (generalised estimating equations) was used to model the longitudinal data.

**Results:** Clinical data were available for 6651 children. At the four examinations for 5470 (96.8%), 5476 (97.5%), 3443 (80.4%) and 2733 (82.9%) participants completed the intra-oral examination. Mean caries prevalence (% D3MFT>0) was 16.7% (n=911) at the first clinical examination (ages 7 to 9) increasing to 31.0% (n=1695), 42.2% (n=1280) and 45.7% (n= 1249) at subsequent examinations. Estimated mean values indicated a rising D3MFT count as pupils aged (consistent with new teeth emerging) which was significantly higher (4.5 times, 95% CI 3.9 to 5.2) in those pupils with caries in their primary dentition than in those without.

**Conclusion:** In the population studied, children who developed caries in their primary dentition had a very different caries trajectory in their permanent dentition to their caries free contemporaries. In light of these results, caries free and caries active children should be considered as two separate populations, suggesting different prevention strategies are required to address their different risk profiles.

**Acknowledgement of sources of funding:** This work was supported by Colgate-Palmolive. Support cost funding was obtained from Cumbria and Lancashire Comprehensive Local Research Network (CLCLRN).

## Session 1a Oral epidemiology 1 ( Caries in Children)

### 3490. Caries experience among children up to 3 years old from Minsk, Belarus

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**Aim:** The aim of this study, which took place in 2012, was to investigate the dental caries prevalence among infants and toddlers and the most significant risk factors for this in Minsk, Belarus.

**Methods:** A total of 800 children aged 6-36 months (average age 14.7 months), from randomly selected paediatric clinics in Minsk, were surveyed by one dentist to assess dental caries, using the d1- 4mft index. Parents were asked to fill in the questionnaires about their children's oral hygiene and feeding practices. The results were analysed statistically. Logistic regression was used to reveal the strongest predictors for Early Childhood Caries (ECC) and create a model for prediction of the condition. For this purpose 74 risk factors were analysed. Ethics approval was obtained from the Regional Ethics Committee of the Belarusian State Medical University.

**Results:** Of the sample of 800, 383 (48%) were girls and 417 (52%) boys. Forty one children (5%) were still edentulous. Two hundred and forty nine (31%) of the children had dental caries. The prevalence increased from 6.7% in 1 year-olds to 57.3% in 2 year-olds and 63.5% in 3 year-olds. The index d1- 4mft was 1.7 (2.9), d1-4mfs was 2.72 (5.27). The mean d1 was 0.42 (1.17), d2 – 0.33 (1.02), d3 – 0.85 (1.38), d4 – 0.04 (0.34), m – 0.04 (0.36), f – 0.02 (0.28). Dentine caries was diagnosed more often and almost all carious lesions in infants and toddlers were untreated. Carious lesions were diagnosed more often on central upper incisors (33.6%), lateral upper incisors (37.6%) and first upper molars (29.3%). The mother's educational level had an influence on the prevalence of ECC ( $\chi^2 = 19.8$ ,  $p < 0.001$ ). The strongest predictors of ECC were frequency of night feeding during 2-3 last months ( $p < 0.000$ ), night bottle feeding ( $p = 0.003$ ) and visible plaque on teeth ( $p = 0.0006$ ).

**Conclusion:** ECC is a major problem from a population health perspective but it is predictable and preventable. Rational feeding and early commencement of oral hygiene are the main preventive measures for young children.

The presenter of this abstract (3490) received a Colgate Travel Award

### 3494. Caries Experience Among Urban 12-Year-Olds in Russia from 1998 - 2016

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Previous studies (National Oral Health Survey (NOHS, 2008)) have indicated that 73% of 12-year-old children in Russia have caries. Prevalence of caries in urban populations is influenced by access to dental care, diet and environmental factors.

**Aim:** The aim of the study was to evaluate caries levels among urban 12-year-olds in Russia over an 18-year period.

**Methods:** As part of the 3rd NOHS, 3,929 12-year-olds from 13 cities in different Russian regions—Central, North-Western, Southern, Privolzhsky, Ural, Western-Siberia and Eastern-Siberia—were randomly selected and examined in 2016 using WHO (2013) criteria. Dental examinations were performed by calibrated dentists. Caries prevalence, scored by DMFT, was compared between 1998, 2008 and 2016 by using the T-test. Fluoride content in drinking water was measured in all cities. The study was approved by the Ethical Committee of Moscow State University of Medicine and Dentistry.

**Results:** The number of caries-free 12-year-olds in different cities varied from 4% to 51% in 1998, from 12% to 53% in 2008, and from 2 to 53% in 2016. Mean DMFT values were  $2.97 \pm 0.22$ ,  $2.51 \pm 0.24$  and  $2.53 \pm 0.27$ , respectively ( $p > 0.05$ ). The D-component decreased from  $1.38 \pm 0.17$  in 1998 to  $1.08 \pm 0.16$  in 2016 ( $p > 0.05$ ). The mean number of filled and missing teeth decreased from  $1.54 \pm 0.21$  to  $1.43 \pm 0.18$  ( $p > 0.05$ ) and from  $0.04 \pm 0.01$  to  $0.02 \pm 0.001$  ( $p < 0.05$ ), respectively. A decreasing tendency in caries prevalence was observed in Central (fluoride 0.2-0.6 mg/l) and Ural regions (fluoride 0.7 mg/l). Caries prevalence has not changed, and was moderate in Western Siberia (fluoride 0.04-0.28 mg/l) and low in Eastern Siberia (fluoride 0.28-1.00 mg/l). An increase of DMFT ( $p < 0.001$ ) was observed in Petrozavodsk (North-Western region,  $1.94 \pm 0.16$ - $3.40 \pm 0.22$ ) and Maykop (Southern region,  $3.24 \pm 0.28$ - $4.56 \pm 0.36$ ,  $p < 0.01$ ). In Nizhniy Novgorod (Privolzhsky region,  $4.43 \pm 0.26$ - $2.55 \pm 0.27$ ) and Volgograd (Southern region,  $2.33 \pm 0.21$ - $1.79 \pm 0.13$ ) caries prevalence levels decreased from high to low ( $p < 0.001$ ) and from moderate to low ( $p < 0.05$ ), respectively. In Murmansk (North-Western region,  $2.38 \pm 0.21$ - $2.70 \pm 0.40$ ) and Izhevsk (Privolzhsky region,  $3.22 \pm 0.34$ - $2.82 \pm 0.40$ ) the level of DMFT in 12-year-olds remained moderate ( $p > 0.05$ ). Fluoride concentration in drinking water in these cities is low (0.08-0.26 mg/l).

**Conclusion:** There was a decrease of DMFT among urban 12-year-olds over 18 years, but with city-specific deviation. These data can be used for monitoring caries experience and as a baseline for planning caries prevention strategy on a regional level.

The presenter of this abstract (3494) received a Colgate Travel Award

## 3543. Caries prevalence and oral health determinants of 12-year-old children in Latvia

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**Aims:** The primary aim was to evaluate the prevalence and severity of caries in 12-years-old children in Latvia. In addition, the severity of periodontal diseases, dental erosion, trauma, fluorosis and mucosal pathologies were assessed.

**Methods:** A cross-sectional study was carried out in 95 Latvian schools in 2016, selecting a sample of 3,691 12-years-old children by stratified cluster sampling. Sample size was calculated knowing the number of schoolchildren in the target age group ( $n=18,801$ ) with expected caries prevalence of 80% and a 95% confidence interval. After parental informed consent, seven calibrated examiners (inter-examiner-Kappa: 0.718-0.767; intra-examiner-Kappa: 0.806-0.974) undertook clinical examinations with a portable medical examination table, forehead lamp light (80-lumen), dental mirrors and CPITN probes using the ICDAS methodology for three levels of caries detection (D1 for ICDAS codes 1-6; D3 for ICDAS 3- 6; D5 for ICDAS 5-6). To evaluate fluorosis,



Dean's index was used and for all other oral health determinants the WHO (2013) methodology was used. Descriptive statistics were calculated.

**Results:** A total of 2,138 schoolchildren were examined. Caries prevalence was 98.5% (n=2,106) at the non-cavitated level (D1), 79.8% (n=1,706) for cavitated caries (D3) and 71.9% (n=1,537) at the level of frank cavity (D5). Average D1MFT was 9.21, D3MFT was 3.59, and D5MFT was 2.50. The prevalence of gingivitis was 74.4% (n=1,591); 12.1% (n=258) had experienced dental trauma, with enamel fracture being the most common; 2.9% (n=62) were undergoing orthodontic treatment, 0.7% (n=15) had dental erosion, 1.1% (n=24) fluorosis and 1.3% (n=27) oral mucosal pathologies.

**Conclusions:** Caries prevalence was very high among Latvian 12-years-old children, with the vast majority having experienced caries. Also, children had a high prevalence of gingivitis, but very low prevalence of other oral diseases. Caries prevention programmes are required for this population.

**Acknowledgement of sources of funding:** Supported by Disease Prophylaxis and Control Centre – purchase Nr.SPKC 2015/26, contract Nr.P/2015-89 with Rīga Stradiņš University

## 3556. Molar Incisor Hypomineralisation Among 12-Year-Olds in Northwest Russia

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**Introduction:** Although there is a considerable amount of evidence on molar incisor hypomineralisation originating from developed countries, the evidence from Russia is almost non-existent.

**Aim:** To estimate the prevalence of molar incisor hypomineralisation (MIH) across genders and place of residence as well as its association with dental caries among 12-years-old children in Northwest Russia.

**Methods:** A cross-sectional study included 1233 (653 girls) randomly selected 12-years-old children from seven urban and five rural areas of the Arkhangelsk region. MIH and its severity were diagnosed using Weerheijm et al. (2003) and Mathu-Muju & Wright (2006) criteria, respectively. Dental caries was studied by two calibrated examiners at the D3 level following WHO (2013) recommendations. By place of residence all participants were dichotomised into urban and rural residents. Prevalence of MIH and caries and means for Decayed-Missing-Filled (DMFT) scores are presented with 95% confidence intervals (CI). 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.

**Results:** The overall prevalence of MIH was 2.1% (95%CI:1.44-3.07) with no difference by gender ( $p=0.760$ ) or place of residence ( $p=0.532$ ). The prevalence of mild MIH was 46.2% (95%CI:28.8-64.5). Average and severe MIH were diagnosed in 26.9% (95%CI:13.7-46.1) of children. The prevalence of caries among those with and without MIH was 100% (95%CI: 87.1-100.0) and 74.8% (95%CI: 72.3-77.2), respectively ( $p=0.003$ ). Mean DMFT values for children with and without MIH were 4.46 (95%CI:3.20-5.72) and 2.45 (95%CI:2.33-2.58), respectively ( $p<0.001$ ).

**Conclusions:** Although the prevalence of MIH in Northwest Russia is lower than in most other countries the



findings of this study suggest that hypomineralised molars are much more prone to caries. No difference across genders or place of residence were observed. The factors behind the main findings will be discussed in the poster.

## 3608. Caries Preventive Effect of Polyols in the Primary Dentition

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**Aim:** To assess changes of the International Caries Detection and Assessment System (ICDAS) codes in primary dentition in a 3-year double-blind randomised controlled prospective clinical trial with three different polyols erythritol, xylitol, and sorbitol (control).

**Methods:** A representative sample (n=522) of the 1st and 2nd year primary school children in Southeast Estonia were included. The Research Ethics Committee of the University of Tartu approved the study (166/T-7). Clinical trial registration: NCT01062633. Written informed consent was obtained from the parents/caregivers. The participants (n=485, 93%) were randomly (according to classrooms) allocated into three groups: erythritol (n=165), xylitol (156), and control (164). Polyol-containing candies with a daily polyol consumption of 3 x 2.5g were administered on school days by the teachers. Clinical examinations were completed four times (baseline in 2008, 12-, 24-, 36 months of intervention). There were four examiners and their inter-examiner and intra-examiner repeatability was high, the weighted kappa >0.9. In the analyses, the ICDAS codes 1-3 were combined to enamel caries teeth, d1-3mft and surfaces, d1-3mfs and the ICDAS codes 4-6 to d4-6mft and d4-6mfs. Comparisons between the groups were performed with the nonparametric methods due to skewed distributions. The differences in caries indices between the groups were compared with Kruskal-Wallis test.

**Results:** Caries indices (d4-6t/d4-6s) were statistically significantly lowest in the erythritol group after 24 months (0.59/0.89; p=0.04/0.04) and after 36 months (0.47/0.53, p=0.08/0.04) of the intervention, compared to the control (0.93/1.3) after 24 months and (0.72/1.06) after 36 months and to the xylitol (0.96/1.63) after 24 months and (0.67/1.03) after 36 months groups.

**Conclusion:** Erythritol seemed to have the strongest caries preventive effect with the lowest mean caries indices after 24- and 36 months intervention in the primary dentition.

**Acknowledgement of sources of funding:** Acknowledgement: a Cargill R&D Europe grant supported this study.

## 3657. Socio-Economic Status and Early Childhood Caries among 3-5 years old children in Tirana city, Albania

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**Aim:** The aim of the study was to determine the prevalence and severity of Early Childhood Caries among the 3-5 years old children and to evaluate its association with socio- economic status.

**Methods:** This was a cross-sectional study conducted in 2015 in Tirana city. Caries severity of ECC was assessed using dmft, according to classification of American Academy of Paediatric Dentistry ( 2008). Permission for the study was given by the Tirana Directorate of Education and a parental consent form. A cluster sampling technique was used for sample selection. Six out of 42 public kindergartens were randomly selected . Kindergartens were grouped as clusters. Sample size calculation was determined at 734 participants. A higher number of children was included and 904 children 3-5 years old participated. Information was obtained through a structured questionnaire that was completed by parents. It covered social economic status indicators, brushing habits and frequencies. The WHO (1997) criteria for dmft were followed. Clinical examination was performed with single use instruments. Training and calibration was performed by two examiners, who achieved an inter-examiner Kappa score of 0.802. The data were analysed by SPSS.18 software. Descriptive statistics and the Chi square test were used and the level of significance was set as  $p < 0.05$ .

**Results:** 1223 questionnaires were distributed and the response rate for dental examination and questionnaire was 904 (50.2% boys and 49.8% girls). Prevalence of ECC was 91% (823/904). 561 (62.1%) of the children suffered severe ECC with a mean dmft = 6.45 (SD±4.25). The severity of ECC was lower in children whose mothers had higher levels of education ( $p < 0.001$ ). The lower and medium income level of SES was associated with higher ECC ( $p < 0.001$ ).

**Conclusions:** The prevalence of ECC and the mean dmft was high in preschool children of Tirana. A strong correlation was found between socio-economic status and ECC.

## 3658. Caries in 12-Year-Olds Living in Volgograd and Neighbouring Rural Areas

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**Aim:** To compare dental caries prevalence in children aged 12 years living in the city of Volgograd and neighbouring rural areas in Russia.

**Methods:** Dental examinations in the frame of the National Epidemiological Study were organised in randomly selected secondary schools in seven city districts and in six neighbouring rural areas. 607 children aged 12 years participated in the study (357 from Volgograd). The sample size was calculated according to WHO

recommendations for epidemiological studies (40-50 participants from each district/area). Parents' written informed consent was obtained before the research. The study was conducted according to WHO (1997) recommendations. Dental caries was recorded using DMFT-index (D-component was measured at the cavitated level). The prevalence of dental caries (percentage of children with DMFT>0), the mean DMFT- index, means of D, F and M components, and the standard error of means ( $\pm m$ ) were calculated. The dental care index was measured as the proportion (%) of the filled teeth in DMFT-index. The significance of differences was assessed by the Student t-test (at  $p \leq 0.05$  level).

**Results:** The response rate was 100%. The number of caries free 12 year old children was 130 (36.4%) out of 357, in urban areas compared with 73 (29.2%), out of 250 in rural areas. Dental caries was found in 227 (63.6%) out of 357 urban children and 177 (70.8%) out of 250 rural children, the mean DMFT was  $2.01 \pm 0.11$  and  $2.06 \pm 0.29$  respectively. The differences between these indices in urban and rural children were not statistically significant ( $p > 0.05$ ). However, differences were found between the means of the D and F components in urban and rural children:  $0.39 \pm 0.04$  vs  $1.11 \pm 0.09$  ( $p < 0.001$ ) and  $1.59 \pm 0.11$  vs  $0.92 \pm 0.09$  ( $p < 0.001$ ). The mean M component was the same in urban and rural 12-year-olds ( $0.03 \pm 0.01$ ). The dental care index was 79.1% in urban and 44.7% in rural children ( $p < 0.001$ ).

**Conclusion:** The prevalence of dental caries and the mean DMFT-index in 12-year-old children from urban and rural areas did not show statistically significant differences. However, rural children had significantly fewer filled teeth than their urban peers. These differences emphasise that the access to dental care in urban areas is easier than in rural areas and the need to improve dental service for children in rural areas .

**Acknowledgement of sources of funding:** Volgograd Region Administration Health Care Committee, Volgograd Regional Association of Dentists, Volgograd State Medical University.

## 3677. Early Childhood Caries Prevalence And Tooth Surface Distribution In Volgograd Children

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**Aim.** To reveal early childhood caries (ECC) prevalence and surface distribution in primary teeth of 4-35 month old Volgograd children.

**Methods.** The study was approved by Regional Ethics Committee. A cross-sectional investigation was carried out in Volgograd Paediatric Clinic №15 in 2010. 596 children were randomly assigned to three groups: 288 aged 4-11 months (G1), 220 aged 12-23 months (G2), 88 aged 24-35 months (G3), mean age 9.4 months, 15.5 months and 27.6 months respectively. Informed consent was obtained from mothers. The caries status was assessed by ICDAS-II criteria. Statistical analysis was performed by STATISTICA-6, caries prevalence, surface distribution, indices mean scores and were calculated at a 95% confidence interval (CI).

**Results.** In G1 97.2% children were caries free, 94.1% in G2 and 70.5% in G3, ICDAS-II score 1-3 was found in 2.8% (CI 1.83-3.77) children in G1, 4.6% (CI 3.19-6.01) in G2, 22.8% (CI 18.33-27.27) in G3. A score 4-6 was only found in 1.3% (CI 0.54-2.06) children in G2 and 6.7% (CI 4.04-9.37) in G3,  $p < 0.001$ . Most commonly affected teeth were upper medial and central incisors (58.6%) and upper and low first molars (31.4%). Vestibular surfaces of primary teeth were affected in 38.8%, palatal surfaces in 26.4%, occlusal surfaces in 21.0%, medial

in 11.0%, distal in 4.6% respectively. Vestibular and palatal surfaces were similarly affected by initial (ICDAS 1-3) and deep (ICDAS 4-6) caries lesions. Deep carious lesions were found in occlusal, medial and distal surfaces.

**Conclusions:** The caries status assessment by ICDAS-II revealed high ECC prevalence in young Volgograd children; the assessment caries at a non-cavitated level by ICDAS-II may assist practitioners to promote comprehensive treatment planning for young children.

**Acknowledgement of sources of funding:** Volgograd State Medical University, Volgograd, Russia

## 3680. Dental Services uptake of Israeli Children in first 5 years of reform (2011-2015)

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**Aim:** To investigate the uptake of dental services in the first five years (2011- 2015) of the latest reform.

**Methods:** Analysis of data provided by the 4 HMOs (Health Maintenance Organisations) to the Ministry of Health.

**Results:** The eligibility for the services started up to age 8 years. It then rose to age 12 years. In 2016, it rose further to age 14 years and then to age 15 years on 1 January 2017. The number of eligible children increased from 1,549,851 to 1,964,369 as the eligible age went up from 8 to 12 years. The proportion of treated children increased from 283,824 (18%) in 2011 to 660,840 (34%) in 2015. The most treated age group were the 6-8- year-olds. The preventive component has increased since 2012 as the restorative component has decreased. Between 2011-2015 the number of treatments per child decreased from 3.73 to 3.4. However, the preventive component increased from 1.25 (33%) to 1.5 (44%). About 1% of the treated children were treated under general anaesthesia, but the percentage treated in this way has decreased.

**Conclusions:** During the first five years following the most recent reform, the uptake of both preventive and restorative services by the eligible population increased as well as the preventive treatment component. It is expected that the current trends will continue in the coming years.

## 3698. Oral Health Status of Children with Mouth Breathing

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**Aim:** Mouth breathing is an important health problem, commonly encountered in children. It may cause atypical swallowing, various malocclusions and irregular craniofacial development as well as negatively affecting oral and dental health. In children, adeno-tonsillar hypertrophy is the main reason causing partial or complete upper

airway obstruction and reduction in airflow. This study aimed to determine the oral health status of children, aged 3 - 15 years, with mouth breathing who were due to have surgery for adeno-tonsillar hypertrophy and who had been referred to the Department of Otorhinolaryngology at Children's Hospital of a University in Ankara between January and July 2015.

**Methods:** After the approval of the Local Ethics Committee of Hacettepe University, a questionnaire was completed by the parents before the operation. Written informed consents were obtained from the parents. The children were examined using dental mirror and explorer under dental unit lighting after air-drying. Oral health status was evaluated with DMFT/S, dmft/s, ICDAS II, dental plaque and gingival indices. Posterior teeth, anterior teeth and canine relationships as well as crowding were also evaluated. The chi-squared, Kruskal Wallis and Mann Whitney U tests were used to statistically analyse the results, with statistical significance set at  $p < 0.05$ .

**Results:** Of the 170 children, with mouth breathing difficulties, who were due for surgery, the parents of 150 agreed to take part in the study, 77 of the children (51.3%) were male and the mean age was  $5.9 \pm 2.6$  years. Mean dmft was  $3.8 \pm 3.6$ , mean dmfs was  $9.7 \pm 1.1$ , mean DMFT was  $0.4 \pm 1.0$  and the mean DMFS was  $0.6 \pm 1.5$ . Among the children, 101 (67.3%) had cavitated dental caries and according to ICDAS II index none had healthy teeth, 15 (10.0%) had initial, 42 (28.0%) had moderate and 93 (62.0%) had extensive caries. One hundred and thirty four (89.3%) of the children had gingivitis and the proportion of gingivitis in posterior region was found to be significantly higher than that of anterior region ( $p < 0.001$ ).

**Conclusions:** The oral health status of mouth breathing children was bad. To reduce the risk of dental caries and periodontal diseases among these children, regular dental follow-up and preventive programmes are needed.

## Session 1b. Oral Epidemiology 2 (Adults)

### 3502. Knowledge of Emergency Management of Avulsed Teeth among Newly Graduated Dentists

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The management of the avulsion of primary and permanent teeth in children is well outlined in trauma guidelines. However, little information is available about the level of knowledge in the management of avulsed teeth among young dentists in Turkey.

**Aim:** This study, which was performed in 2016, therefore aimed to investigate the knowledge and attitude of newly graduated dentists regarding emergency management of avulsed teeth.

**Methods:** A cross-sectional questionnaire survey regarding the immediate emergency management of avulsed teeth was performed. The questionnaire was sent via email to a convenience sample of 90 dentists (60 female; 30 male) who graduated from Marmara University Dental School during the period 2012–2016. Simple descriptive analysis was undertaken using Microsoft Excel. In Turkey ethics approval is not required for surveys of health staff such as this one, in which completion of a questionnaire is voluntary and anonymous.

**Results:** The majority of the dentists 82 (91%) stated that they did not receive any training in the emergency management of dental trauma during their undergraduate education. Seventy nine (87%) of responding dentists recalled replanting an avulsed permanent tooth in a child. Twenty seven percent of the respondents reported that they used rigid splints for treating avulsed teeth and 59 (65%) that a flexible splint should be used. Among the respondents, 85 (94%) said that an avulsed primary tooth cannot be re-implanted. Questions on storage medium, preparation of the alveolus and splint time for receiving the avulsed tooth received a high number of correct answers. The best way to transport an avulsed tooth to the dental clinic was reported as “milk” 88 (98%).

**Conclusions:** In this pilot study, among the young dentists who responded, there appeared to be appropriate knowledge regarding the emergency management of avulsed teeth, the benefits of timely care and its prevention. However, they acquired this knowledge after graduating.

### 3518. Frequency, Classification and Pathology of the Third Molars in Troms County, Northern-Norway

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**Aim:** To investigate the prevalence and condition of third molars associated with the adjacent structures in adults, aged 20 to 35 years, living in Troms County, Northern Norway  
**Methods:** This study was a part of a cross-sectional, population-based study Tromstannen (TOHNN).

**Methods:** A random sample of 700 20-35 year-olds living in Troms County were invited to participate and orthopantomograms (OPGs) were taken for 505 of them during October 2013-November 2014. Out of 505, 254 OPGs were excluded due to; i) poor quality, ii) none of the third molars presented, iii) incomplete dentition, iv) retainer presence or obvious orthodontic treatment. The remaining 251 OPGs (130 of females and 121 of males with total 763 third molars) were assessed in this study. Calibration of the two assessors was performed by evaluation of ten OPGs (40 third molars) with a maxillofacial radiologist on a calibrated monitor for radiographic purposes under the optimal dim light in a darkroom. Differences were discussed and agreed upon. After two weeks, the OPGs were re-assessed and the inter- and intra-observer reliability were calculated. The position of third molars was assessed according Winter's, Pell and Gregory's and Archer's classifications. The study was approved by the regional ethical committee in Northern Norway (2013/348/REK Nord).

**Results:** The average number of third molars was 2.5 per person (females 2.35, males 2.67). Vertical angulation was the most common position (325 molars (42,6%)) and 269 molars (35.3%) had disto-angular impaction. The most common impaction in the maxilla was disto- angular (205, 52.4%) and vertical in the mandible (189, 50.1%). There were significantly more molars impacted in mandible (272, 73.5%) compared to maxilla (167, 42.7%) ( $p<0.0001$ ). Females had a significantly higher number of impacted third molars (242, 63%) than males (198, 52%) ( $p=0.002$ ). Sinus approximation to the roots was found in 216 (55.2%) of maxillary third molars. In the mandible 148 (39.8%) of third molars showed at least one radiological sign of a close relation to the mandibular canal. An enlarged follicle was seen in 28 molars (3.7%) of third molars with a significantly higher number in the mandible ( $p<0.0001$ ). Root resorption of second molar due to the third molar was seen in seven molars (0.9%) all in males.

**Conclusions:** In the population examined, nearly 60% had at least one impacted third molar and there was a higher percentage in women. In general, it was unlikely to find an enlarged follicle. Root resorption of a second molar due to a third molar was found only in men.

**Acknowledgement of sources of funding:** 1. Institute for Clinical Dentistry, Faculty of Health Sciences, The Arctic university of Norway 2. The Public Dental Health Service Competence Centre of Northern Norway, Tromsø, Norway 3. School of Education, Health and Social Sciences, Dalarna University, Falun, Sweden

## 3520. Diagnoses of Dental Disease in Regions with Low and High Numbers of Dentists

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**Background:** The average number of dental practitioners (DPs) in Lithuania is one of the highest in Europe, but DPs are unequally distributed over the country. In the regions with low numbers, DPs may be able to provide only urgent dental care, with less emphasis given to prevention of oral diseases and maintenance of oral health.

**Aim:** To investigate if acute dental diseases (ADD) were diagnosed and recorded more often in regions with low



number of DPs compared to regions with high number of DPs.

**Methods:** The diagnoses of dental diseases (DD) among 2-17 year-olds were retrieved from the Lithuanian Hygiene Institute database and selected diagnoses were dichotomized as ADD (pulpitis, acute periapical periodontitis and periapical abscess) and chronic and/or prevention prone (initial carious lesion, carious lesion in dentine and/or cementum, arrested carious lesion and erosion). The number of DPs for 2015 for 59 Lithuanian towns and municipalities was retrieved from the Lithuanian Dental Chamber. The regions were categorized as high coverage (10- 14.99 dentists for 10,000 inhabitants) and low coverage (0-4.99 dentists for 10,000 inhabitants). Out of 59 towns and municipalities, all four highest coverage regions and all 13 lowest coverage regions were included. Analyses were performed using Excel 2013 and SPSS version 24. The study was evaluated as a quality assurance project that used anonymised data for which ethics approval was not required.

**Results:** In the selected regions in total 142,409 2-17 year- olds were registered as having at least one diagnosis from the International Classification of Diseases during the year 2015; 25,930 (18.2%) subjects had a DD. The most common DD was a carious lesion in dentine and/or cementum, (87 (45%) and 5552 (78%)) and (56 (45%) and 2301 (85%)) in high and low coverage regions, respectively. However, in one low coverage region it was an initial carious lesion (230, 47%). Univariate binary logistic regression analysis, showed that 2-17 year-olds in high coverage regions had 12% increased odds of having ADD compared to their peers in low coverage regions (OR=1.12, 95% CI 1.05-1.2).

**Conclusions:** Despite the high number of dentists in the country, it seems that children and adolescents, receiving free of charge dental care, do not benefit adequately from the system and the unequal distribution of DPs does not seem to have a substantial role.

## 3545. Dental Health and Relating Factors in Riga Adult Population.

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**Aim:** To describe caries experience of 35-44 year-olds in Riga and to identify determinants associated with presence of decayed surfaces (DS) and the number of sound teeth (ST).

**Methods:** The present study was part of an oral health cross- sectional investigation in which 350 randomly selected 35-44 years-old adults from Riga were invited to participate. A random sample of individuals was drawn from the Office of Citizenship and Migration Affairs database and letters of invitation were sent. Approval for the study was obtained from the Riga Stradiņš University Ethical Committee. Out of 265 individuals who responded, 134 (51%) participated in the study (the sample is not representative for all Riga 35-44 year-olds). The participants were examined clinically and radiographically. Dental caries was recorded as a DMFT/DMFS-score. A questionnaire was used to collect information about health-related habits (tooth brushing frequency, use of fluorides, smoking), attitudes (dental visits) and socio-demographic parameters (gender, marital status, education). Associations between DMFT, DMFS, number of ST, DS and related factors were tested through multiple logistic regression analysis using the SPSS 20 software.

**Results:** The mean DMFT-score was 17.6 and the mean DMFS-score was 50.0. The mean DS-score was 8.2, and the mean FS-score was 29.6. The mean number of sound teeth per person was 10.4. Nine individuals (6.7%) had no decayed surfaces. Statistically significant association was found for DMFS and gender ( $p=0.03$ ), flossing habits ( $p=0.01$ ), time since last dental visit ( $p=0.034$ ). Both DMFT and DMFS were associated with the presence of apical periodontitis ( $p<0.01$ ). Individuals who had used fluoride toothpaste had lower DS ( $p=0.049$ ). Males ( $p=0.03$ ) and those individuals who had visited dentist more than a year period ( $p=0.01$ ) had more ST. **Conclusions:** In the population studied caries prevalence was high and some non-biological factors were associated with dental health.

**Acknowledgement of sources of funding:** Supported by RSU Institute of Dentistry, Riga, Latvia

## 3549. Association between Hypertension and Number of Teeth among Finnish Middle-aged Adults

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**Aim:** The aim of this study was to investigate the association between hypertension and number of teeth among Finnish middle-aged (46-year-old) adults.

**Methods:** This cross-sectional study is part of the longitudinal Northern Finland Birth Cohort 1966 (NFBC1966) study comprising a comprehensive sample of individuals from Northern Finland. The follow-up of 46-year-olds included mailed questionnaires and clinical health examinations in 2012–2014. The Ethics Committee of the Northern Ostrobothnia Hospital District in Oulu, Finland approved the study protocol, which followed the principles of the Declaration of Helsinki. Participation in the study was voluntary and the participants (n=5,974; participation rate 58%) provided their written informed consent. Overall, 4,411 adults (1,856 men and 2,555 women) provided information on hypertension, self-reported number of teeth and background variables (education, smoking, body mass index, diabetes). Hypertension status (the outcome) was confirmed, if at least one of the following conditions was fulfilled: systolic blood pressure  $\geq 140$  mmHg, diastolic blood pressure  $\geq 90$  mmHg or reported use of medication for hypertension. Number of teeth was defined as three categories: 0–24, 25–27 and 28–32 (as reference). Chi-square test and multiple logistic regression, with adjusted odds ratios (OR) and 95% confidence intervals (CI), served for statistical analyses.

**Results:** Hypertension was found in 1,712 (39%) participants. Men had more hypertension than women: 887 (48%) vs 825 (32%) ( $p < 0.001$ ). A lower number of teeth was associated with hypertension: men with 0–24 and 25–27 teeth had OR=1.5 (CI=1.1–2.0) and OR=1.3 (CI=1.0–1.6), respectively; women with 0–24 and 25–27 teeth had OR=1.4 (CI=1.0–2.0) and OR=1.1 (CI=0.9–1.4), respectively.

**Conclusions:** Among the group of Finnish middle-aged, who took part in this study, a lower number of teeth indicated a higher likelihood of hypertension among both men and women.

## 3553. Oral Health Status of Undocumented Immigrants in Ghent, Belgium

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**Aim:** The present survey aimed to explore the oral health and the level of care within a sample of undocumented immigrants.

**Methods:** Data were collected between February 2015 and November 2016 from a convenience sample of illegal immigrants who visited 'De Tinten', an organisation that provides material and social assistance to illegal immigrants in Ghent, Belgium . Participants were asked to be involved in an oral health screening, including an interview and visual inspection by two trained dentists. After oral consent, they were interviewed on age, nationality and smoking habits. Oral health parameters included D3MfT, PUFA index, Restorative Index

( $RI=(Ft/D3Ft)*100$ ), Care Index ( $CI=Ft/D3MFt$ ) and Treatment Index ( $TI= (MFt/D3MFt)$ ). Periodontal health was determined by means of the DPSI score. Plaque index of Sillness and Loe (1964) was used to measure the amount of dental plaque. Different age groups were compared based on the 25, 50 and 75 percentiles, using Chi Square statistical test for dichotomous and One-way ANOVA test for continuous variables. The study was approved by the Ethics Committee of the University Hospital Ghent (2015/1340).

**Results:** 204 subjects were assessed, with a mean age of 36.7 years (SD=15.9) and age ranging from 1 to 69 years. Almost half (73 (46.3%) of the respondents reported to be smokers. Mean plaque index was 1.37 (SD=0.84). Untreated dental caries was visible in 146 (71.6%). Of those with caries, 74 (46.7%) had at least one tooth with a visible pulpal exposure. The level of care was low, with an average restorative index of 30.3% (SD=36.9) and treatment index of 51.5% (SD=37.9). Periodontal health was poor, 97 (62.2%) ) having a DPSI score of 3 or 4. A very low mean treatment index (23.1%) was seen in the youngest age group, compared to 80.5% in the oldest age group ( $p<0.001$ ).

**Conclusion:** Undocumented people show very poor oral health, both in terms of caries and poor periodontal status. The need for dental care is high, especially in the youngest age group.

## 3654.Ethnicity, Socioeconomic Position and Dental Pain in English Adults

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**Aims:** Substantial evidence suggests that there are ethnic disparities in the prevalence, treatment, development and outcomes of pain. Ethnic disparities in oral health have also been observed especially in the prevalence of dental caries and periodontal diseases. Immigrant groups overall have a lower socioeconomic position than the native population, this poses the question are ethnic inequalities the result of the lower socioeconomic position alone, or does ethnic background also play a role? Aim: The main aim of this study is to explore whether there are ethnic disparities in dental pain within a national sample of English dentate adults.

**Methods:** The project will be based on secondary analysis of data from the Health Survey for England (1999 to 2005) which selected a new, nationally representative, random sample of private households (16 years and above Bangladeshi, Black African, Black Caribbean, Chinese, Indian, Irish, or Pakistani origin, the largest non-mixed minority ethnic groups in England) using two-stage, stratified probability sampling. Statistical evaluation will be performed with logistic regression models and weighted analysis. Interaction tests between SEP indicators and ethnicity will also be explored. As it will be an analysis of secondary data in which no individuals can be identified, ethics approval was not sought.

**Results and Conclusion:** Data analysis will be conducted between March and May as part of the MSc in Dental Public Health programme which the presenter is currently undertaking; it is hoped that results will be available by the end of May and can be presented at the EADPH Vilnius conference.

## 3662. Clinical Efficiency of Dental Pulp Capping with Rootseal

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**Aim:**The aim of the study was to evaluate the clinical effectiveness of pulp capping with dental Portland cement (Rootseal\*) in the treatment of dentine caries and pulp hyperemia.

**Methods:** In this study the sample of 202 teeth in 130 patients was recruited from all patients who had exposed dental pulps and who attended the 7 Minsk City Dental Clinic during the period 2012 - 2014 and agreed to take part. Patients, who visited the clinic on odd days of the month, were selected for the calcium hydroxide group. Patients who visited the clinic on even days were selected for the Rootseal group. The patients signed "Informed consent for participating in research". The study was approved by Bioethical Committee of Belarusian State Medical University. The patients were between the ages of 18 - 55 years old. The method of preserving pulp viability with Rootseal was used in 80 patients and 97 teeth. In the control group 105 teeth of 70 patients were treated with calcium hydroxide. In the Rootseal group 51 were treated with indirect pulp capping and 46 were treated with direct pulp capping. In the calcium hydroxide group 69 were treated with indirect pulp capping and 36 with direct pulp capping. Their clinical examination included: establishing the patient complaints, a full oral examination with assessment of oral indices, electric and thermal pulp testing and radiographs. Direct, immediate and long-term results of treatment were evaluated after 2 - 14 days, 3 - 6 months and 1-2 years. The evaluation of the statistical significance of differences between two groups was performed using the Mann-Whitney and the chi-square tests.

**Results:** Not all the teeth were assessed after 12 – 24 months, because for various reasons not all patients could visit the clinic for follow- up examinations. One to two years after initial therapy. In the indirect pulp capping with calcium hydroxide sub-group, 60 teeth (90%) had symptom-free vital pulps and 7 (10%) had chronic apical periodontitis. In the indirect pulp capping with Rootseal sub group 48 teeth (96%) had symptom-free vital pulps, one (2%) had chronic apical periodontitis and one ( 2%) had chronic pulpitis. In the direct pulp capping with calcium hydroxide sub group 18 (53%) of teeth were symptom-free and had vital pulps, one (3%) had chronic pulpitis, 14 (42%) had chronic apical periodontitis and one (3%) had acute apical periodontitis. In the direct pulp capping with Rootseal sub group 43 (96%) teeth had symptom-free vital pulps and 2 (4%) had chronic apical periodontitis. The success of indirect and direct pulp capping with Rootseal was 48 (96%) and 43 (96%) respectively. In the calcium hydroxide group it was 60 (90%) and 18 (53%), a statistical difference of  $p<0.05$ .

**Conclusions:** In the population studied, Rootseal was superior to calcium hydroxide for retaining pulp vitality after a period of one to two years. Rootseal cement is less expensive than other pulp capping materials, moreover, its use reduces treatment time and number of visits, which is relevant to health economics and Dental Public Health.

\*Chemically Rootseal includes a powder portion containing the radiopaque material ( bismuth oxide), cement, comprising dicalcium silicate, tricalcium silicate, tricalcium aluminate, and phosphorus-fluorine material, silicon oxide (SiO<sub>2</sub>, K<sub>2</sub>O, Al<sub>2</sub>O<sub>3</sub>, Na<sub>2</sub>O, Fe<sub>2</sub>O<sub>3</sub>, SO<sub>3</sub>, CaO<sub>2</sub>, Bi<sub>2</sub>O<sub>3</sub>, MgO, and the insoluble precipitate CaO, K<sub>2</sub>SO<sub>4</sub>, Na<sub>2</sub>SO<sub>4</sub>) and a liquid portion containing distilled water. Rootseal is manufactured by the Grodno Institute of the Nitrogen Industry , Grodno, Belarus.

**Acknowledgement of sources of funding:** Belarusian State Medical University, Minsk, Belarus.

## 3676. Problems and Perspectives Identified for the Improvement of Oral Health Care in Belarus

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**Aim:** The aim of this study was to analyse the main reasons for dental visits and care provided for adults in the conservative and surgical departments of the Republican clinical stomatological polyclinic, Minsk, Republic of Belarus. Ethics approval was not required.

**Methods:** The present study analysed data from randomly selected dental records of 1074 patients who had attended the conservative and oral surgery department of the Republican Clinical Stomatological Polyclinic, Minsk in the 2016 year. The age of patients varied from 18 to 78 years (mean =  $48 \pm 6.8$ ); 470 (44%) were males, 604 (56%) were females. Type of attendance (primary, recalled), reasons for dental visit, diagnosis and treatment methods were analysed.

**Results:** According to the data the first visits were 356 of 1074 all the visits (33%). The reason for dental visit of more than 1/3 of the patients - 410 cases (38%), was pain or discomfort in the mouth. The most frequent diagnosis was caries – 372 cases (35%) and apical periodontitis - 298 cases (28%). In the conservative and surgical departments, the most common treatment were fillings - 384 cases (36%) and teeth extraction – 182 cases (17%). No preventive measures were provided for the patients.

**Conclusions:** The most frequent reasons for attendance of the patients to the Republican Clinical Stomatological Polyclinic were pain and discomfort in the mouth. The commonest dental disease was caries and its complications. Accordingly, treatments provided were fillings and tooth extractions. The adults who were assessed in this study were not motivated enough to have regular annual visits to the dentist for check-ups and no preventive measures were recorded on their dental record cards.

**Acknowledgement of sources of funding:** Republican Clinical Stomatological Polyclinic

## 3678. Steps to Address the Challenges in Assessing Erosive Tooth Wear

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**Aims:** Assessing erosive wear is a challenging process; an ideal dental erosion index should be simple with defined scoring criteria, reflective of the aetiology of the condition, accurately categorizing shape, area and depth of affect, and finally be able to assess only erosive wear as it usually co-exists with other types of tooth wear. With the exception of the Basic Erosive Wear Examination (B.E.W.E.), no index appear to meet most of the

above criteria; however B.E.W.E. is a clinical index which does not provide information on the aetiology of the assessed worn lesion, therefore it does not contribute to the differential diagnosis neither to the secondary prevention of dental erosion. A combined index using both clinical and dietary/behavioural/biological criteria could be significantly more accurate to record erosive lesions. The aim of this presentation is to inform the audience on the steps that have and will be taken towards this direction, including the design and content validation of a survey for Diagnosis and (Secondary) Prevention of Erosive Wear (DI.P.E.WE.).

**Methods:** In the last EADPH Special Interest Working Group Tooth Surface Loss/Erosion meeting (Budapest, September 2016), the following decisions have been made: a) the B.E.W.E. was suggested as the most reliable and convenient clinical index to assess dental erosion; b) to address the difficulty to differentiate erosion from other wear types, such as abrasion, it was decided to generate a valid survey of basic erosive risk factors. This survey can be used additionally to B.E.W.E. to assess erosive wear with the best possible accuracy. Therefore, a panel of experts on dental erosion from six countries (U.S.A., Finland, Romania, Hungary, Ireland and Greece) worked between October- December 2016 to formulate and confirm the content validity of the DI.P.E.WE. survey. Also, the next steps were determined in order to validate this survey in clinical setting; i) Random sampling of 50-100 participants from institutions/universities from each country; ii) Record of B.E.W.E. score and saliva flow, and completion of the DI.P.E.WE. survey. The age of the participants should be 14-20 years to avoid co-existence with other tooth wear types. The B.E.W.E. examiners should be one or two for each group of researchers and they must confirm and report their intra and inter examiner agreement (Cohen's kappa) in scoring B.E.W.E. Socioeconomic data can be also collected, such as gender, age, educational level. Please note that the purpose of this survey (after validation) is to be used when someone has B.E.W.E.>0, but in order to validate it, for this study we need also participants with no erosion (B.E.W.E.=0) for comparison. Also, to have the best possible results, these two groups (erosion, no erosion) should be equal or at least with 1:2 ratio; iii) Multivariate analysis and ROC curves will be used to assess the sensitivity and specificity of the survey.

**Results:** An adequately validated survey instrument will be produced to be used additionally to B.E.W.E. in order to assess erosive wear as accurately as possible and to contribute to the secondary prevention of this type of wear. Specific steps will be described and discussed in this presentation on designing, validating and eventually implementing this survey.

**Conclusions:** With this presentation, the audience can become familiar with the process of designing and validating a survey instrument which can be used additionally to a clinical index for the accurate assessment of erosive wear.

## Session 1c. Health Services Research

### 3514. Is Organizational Justice Associated with Perceived Quality of Care and Affective Commitment? - A Multilevel Study

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According to The Swedish National Board of Health and Welfare 2016, the regions are facing an imbalance between the demand and the supply of dental staff.

**Aim:** The present study aimed to investigate whether a central job resource, i.e., organizational justice at the clinical unit level, is associated with staff's perceptions of care quality and affective commitment to the workplace.

**Methods:** The study adopted a cross-sectional multilevel design. All staff from public dental health services of four county councils in Sweden (a large convenience sample) were invited to participate in an electronic survey and a response rate of 75% was obtained. The study was approved by the Regional Ethics Board in Southern Sweden and informed consent was obtained from respondents. The present study included non-managerial dental nurses, hygienists and dentists working in general practice from units with at least five respondents (n=900 from 68 units). A set of Level-2 random intercept models were built to predict individual-level affective organizational commitment and perceived quality of care from unit-level organizational justice. At an aggregated level organizational justice can be understood as a climatic factor of how the group as a whole is treated regarding justice. The study design controlled for the potential confounding of group size, gender, age and occupation.

**Results:** The results of the empty model showed substantial between- unit variation for both affective commitment (Intra- class correlation, ICC-1 = 0.17) and quality of care (ICC-1 = 0.12). The overall results showed that the shared perception of organizational justice at the clinical unit level was significantly associated with perceived quality of care and organizational affective commitment ( $p < 0.001$ ). No significant between-unit variance in affective commitment was left to explain after the introduction of unit-level justice.

**Conclusions:** In the population studied, the results indicate a potential for enhancing affective organizational commitment and opportunities for quality care delivery by promoting organizational justice at the clinical unit level. This could be part of a strategy for preventing future staff turnover.

**Acknowledgement of sources of funding:** The study was funded by the Swedish Research Council for Health, Working Life and Welfare, Grant 012-00796.

### 3519. Strain Symptoms and Work Ability, a Challenge for the Public Dental Health Service

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The Public Dental Health Service (PDHS) in Sweden is challenged by increasing sickness rates, difficulties in recruitment and an expectedly high staff turnover.

**Aim:** The aim of this study was to describe and compare self-rated health and strain symptoms for different work areas and occupational groups within the PDHS and to investigate possible associations between strain symptoms, affective commitment to the workplace and self-rated ability to work.

**Methods:** In 2014- 2015, an online questionnaire based on scales and items from the Copenhagen Psychosocial Questionnaire was sent to convenience samples of all PDHS staff in four regions of Sweden resulting in a response rate of 75% (1345/1782). Self-rated health (one item), work-related stress, burnout symptoms, sleeping problems (four items each) and affective commitment (two items) were assessed by Likert-type scales transformed to scores from zero to 100. The scale used for scoring the ability to work was 0-10. ANOVA, exploratory cluster analyses and correlation analyses were used.

**Results:** Employees within general practice reported lower self-rated health (61.1 vs. 65.0 and 65.5;  $p=0.009$ ) and higher strain symptoms [work-related stress] (36.2 vs. 28.2 and 30.8;  $p<0.001$ ), burnout symptoms (39.8 vs. 32.6 and 32.5;  $p<0.001$ ) and sleeping problems (31.8 vs. 25.3 and 28.2;  $p=0.001$ ) than employees in specialised dentistry or other work areas. The most affected occupational groups were the dentists and clinicians without managerial responsibilities. Higher strain symptoms were clearly associated with negative affective commitment ( $r=-0.478$ ;  $-0.504$  and  $-0.385$ ) and lower self-rated ability to work ( $r=-0.408$ ;  $-0.434$  and  $-0.379$ ).

**Conclusions:** The results of this study support previous research on employees of the Swedish PDHS. Strain symptoms differ according to work area and occupation. In particular, non-managerial dentists from general practice, have a stressful work environment. It is important to know the extent and pattern of strain symptoms and their relationships with self-rated ability to work and resulting commitment to the workplace when planning sustainable future dental services.

**Acknowledgement of sources of funding:** Acknowledgements. The study was funded by the Swedish Research Council for Health, Working Life and Welfare, Grant 012-00796 and by the Public Dental Service, Region Örebro County, Sweden.

## 3544. Incentivising Application of Fluoride Varnish in General Dental Practice in Scotland

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**Aim:** The aim of this study was to evaluate a system-wide financial incentive to increase fluoride varnish application (FVA) to the teeth of 2 to 5 year olds in general dental practice in Scotland, through the introduction of a fee-for service payment into the Statement of Dental Remuneration in October 2011. Two questions were

asked: what impact did the intervention have on general dental practitioners (GDPs) varnishing behaviour and what were the mechanisms through which the intervention may have influenced behaviour?

**Methods:** A cohort study was undertaken in which demographics, frequency of FVA and potential mechanisms of behaviour change, were assessed via a postal questionnaire, distributed between August and October 2011 and then 16 months later after the introduction of the incentive. The questionnaire was piloted on a convenience sample of eight GDPs. All GDPs practising in Scotland (2526) were eligible to participate the first time the questionnaire was distributed. The 1090 who responded were sent the questionnaire for a second time 16 months later. Paired t- tests were used to compare changes in means over time in the same individuals and linear regression to determine whether a change in FVA over time was associated with change in potential behavioural mechanisms over time. Glasgow University Medical Veterinary and Life Sciences Ethics Committee approval was obtained.

**Results:** Of the 1090 GDPs who responded to the original mailing of the questionnaire, 709 (65%) were followed up. The frequency of FVA increased over the 16 months for all GDPs. However, the greatest increase occurred when practitioners reported their varnishing practice in relation to children aged 2-5 years, the group for which a payment had been introduced. The one potential mechanism that appeared to drive an increase in frequency of FVA over the sixteen months was whether practitioners perceived others (colleagues or parents) to support varnish application.

**Conclusions:** In the population studied the introduction of a financial incentive promoted FVA. The results suggest that financial incentives may operate by altering complex inter-linked belief systems. A gap remains between GDPs behaviour and current clinical guidelines.

**Acknowledgement of sources of funding:** The study was undertaken as part of the national evaluation of Childsmile (funded by the Scottish Government). The views expressed in the paper are those of the authors and may not be shared by the funders.

## 3581. Dental Care for Lithuanian Patients with a High Degree of Disability

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Access to professional dental care for Lithuanian patients with severe disabilities has not been previously studied.

**Aim:** To examine access to dental care among adult 18+ years old special needs patients in Lithuania.

**Methods:** The Lithuanian National Bioethics Committee approved the study and verbal consent was obtained from patients themselves or their caregivers. It was a cross-sectional study of patients with severe disabilities and special needs in continuous nursing registered with a public primary health clinic serving a population of more than 740,000 living both in the rural and urban areas. The study included persons with severe physical and/or learning disabilities for whom continuous nursing was required. The Legal List of Criteria for the Needs Assessment to Compensate Special Costs for Regular Nursing include: severe organ failures, when the Barthel ADL index is lower than a score of 20-30, or oligoencephaly when IQ is lower than a score of 20. The study employed a survey questionnaire comprising 32 questions covering demographic and social variables including age, gender, living conditions as well as issues of access to dental care, dental treatment experience, self-perceived oral hygiene and nutrition. The information was collected through face-to-face interviews by nurses in patients' homes. A detailed manual and on-going consultations with nurses assured quality of the data collection. All registered patients were approached.

**Results:** A total of 1331 patients were interviewed out of 1620 (response rate 87.2%). Their mean age was 75.7±17.8 years and 434 (32.6%) were men and 897 (67.4%) were women. From the sample 334 (21.9%) had received dental treatments during the last year, of whom 197 (59%) had prophylactic check-ups and 417 (27.3%) had had extractions. Half of the patients interviewed reported difficulties in accessing dental care and transportation was the most frequently described barrier to professional care. Half of the participants reported chewing difficulties, 734 (48.1%) of the patients brushed their teeth daily and 574 (34.6%) of patients were satisfied with their overall oral health. The majority of participants consider oral health to be an important component of an overall health.

**Conclusion:** Less than one third of Lithuanian patients in this sample, with a high degree of disability, had received dental care in the past year. A substantial proportion of such patients reported difficulties in accessing and receiving professional dental care.

## 3656. Oral Health Care Among Children of a Residential School in Sunsari, Nepal

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**Aims:** Effective school programmes are essential for oral health which affects general health and well-being of school children. School oral health programmes have been regularly conducted at selected public schools in Sunsari, Nepal. The aim of this study was to assess the oral health status among 6-11 year-old children of a residential school during a five-year follow-up.

**Methods:** A longitudinal, retrospective study was conducted using a registry analysis of the available oral health records of all the 80 school children [44 boys and 36 girls] initially enrolled in Martyr Memorial Residential School, Sunsari, Nepal. Oral health records available from 2009-2014 were checked for completeness; 73, 64, 58, 59, 55 and 56 complete records of respective years were analysed. The missing records were of those who had left the school or were absent on the days of oral examination. Data consisting of demographic profile, dental caries and

treatment done (assessed with dmft/DMFT index using WHO 1997 dentition status criteria), and oral hygiene status (assessed with simplified oral hygiene index [OHI-S]) of each child was collected. The Institutional Review Committee of B.P. Koirala Institute of Health Sciences (BPKIHS) approved the study and consent of local guardians was obtained for each child. The examiners were final year BDS students who were trained and calibrated on performing dmft/DMFT and OHI-S indices. Descriptive statistical analyses were performed taking into account the incidences of dental caries over the follow-up years.

**Results:** On initial examination in 2009, dental caries was present in 31 (42.4%) children; none of their teeth were filled. Children developing dental caries in primary teeth over the years (2010-2014) were 6 (9.3%), 2 (3.5%), 2 (3.5%), 0 (0.0%) and 2 (3.6%) and in the permanent dentition they were 5 (7.8%), 6(10.3%), 1 (1.5%), 3 (5.5%) and 6 (10.7%), respectively. Similarly, the numbers of children with filled primary teeth were 13 (20.3%), 13 (22.4%), 15 (25.5%), 17 (30.9%), and 20 (35.7%) whereas, those with filled permanent teeth were 8 (12.5%), 6 (10.3%), 8 (13.6%), 8 (15.5%), and 10 (17.9%), respectively. Initially, 26 (35.6%) children had good oral hygiene. Over the years (2010-2014), good oral hygiene was present in 34 (53.1%), 30 (51.8%), 46 (77.9%), 45 (81.8%), 41 (73.3%) children, respectively.

**Conclusion:** In the population studied, the school oral health programme was effective in improving oral hygiene. Although there was a reduction in children with dental caries in the primary dentition, the same was not the case for the permanent dentition.

## 3663.Public Dental Service (PDS) Facing Impending Health Care Reform in Finland

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**Aims:** An impending health care reform will change the organization, provision and financing of services in Finland alongside a County Government renewal. The Public Dental Service (PDS) faces a new era of commercialization and competition with the private sector. Public financing of oral healthcare will be reduced radically. The aim of this study was to find out what the personnel in the PDS think about their future work opportunities.

**Methods:** An electronic questionnaire was sent to a random sample of 12 health centres in Northern and Southern Finland after ethical approval from the National Institute for Health and Welfare. Altogether 311 PDS employees (121 dentists, 60 dental hygienists and 121 dental assistants) responded; a response rate of 71%. The Chi<sup>2</sup> test was used in the statistical analyses.

**Results:** Only 24 (22%) of those working in Southern and 59 (29%) of those in Northern Finland believed that there would not be changes in their work environment after the reform. In contrast, 56 (51%) and 62 persons (31%) respectively ( $p < 0.05$ ) anticipated that their PDS-unit might become a “commercial company” following the

municipal enterprise or some other model. In the South, 39 (36%) and in the North 43 (21%) persons ( $p < 0.05$ ) expected changes in the work force, most often “more dental hygienists, fewer dentists”. Of the dentists 25 (19%), of the dental hygienists 9 (15%) and of the assistants four (3%) could think of moving to the private sector. Most respondents (241, around 80%) suggested that more immediate treatment of dental emergencies, considerably more periodontal treatment and home care instructions for adults and more dental hygienists would increase efficiency. About half of the respondents 58 (53%) in the South and 85 (42%) in the North ( $p < 0.05$ ) thought that greater patient flow would increase income in the PDS.

**Conclusions:** The dental personnel who responded to the questionnaire expect radical changes in their working conditions especially in Southern Finland where the private sector has a greater market share than in the Northern parts of the country. Dentists and dental hygienists seemed to be more aware of changes than dental assistants.

**Acknowledgement of sources of funding:** The project was funded by The Norwegian Directorate of Health

## 3667. Public Emergency Dental Care Usage of Adults in Tirgu-Mures, Romania

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**Aim:** Dental services for adults are provided through user pays private practices and there is a substantial lack of insurance coverage for oral health care of older people in Romania. The aim of the study was to assess the age and gender distribution of patients requesting public dental emergency care provided by the Dental Office of Mures County Emergency Hospital in Tirgu-Mures, Romania.

**Methods:** This retrospective study was based on the analysis of patient's dental records. Included in the study were all patients who received treatment at the Dental Office of Mures County Emergency Hospital in Tirgu-Mures between February 2012 and September 2016. This is the single 24-hour non-stop dental office in Mures County where anybody may request free dental services, even if it is not an emergency. The study was approved by the Research Ethics Committee of the University of Medicine and Pharmacy of Tirgu-Mures. Data were analysed using SPSS v 17 for Windows descriptive statistics. Student t-test was used and the significance level was set at  $p < 0.05$ .

**Results:** During the period under investigation, a total of 31,122 patients were treated in the emergency dental office. Compared to the first year of the service, the proportion of emergency dental care visits was significantly higher in all other years ( $p < 0.05$ ). Of the total number of 25,012 adult emergency patients 2,458 (9.4%) were aged 60 years or over, significantly more males 1,392 (56.6%) than females 1,066 (43.3%) presented.

**Conclusions:** The results revealed that adults were more likely to visit the public dental emergency office and to be male among 60 years and over in this study population. The high demand for emergency dental services

reflects that dental care in user pays private practices is unaffordable to these patients and also there is a lack of public dental care for adults in Tirgu-Mures, Romania.

## 3673. Integrating Oral Health Promotion within a Family Weight Management Programme: Proposed Initiative

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**Background:** Obesity is a growing global health problem and it has been associated with poor oral health.

According to the Scientific Advisory Committee on Nutrition, excessive consumption of free sugars is a risk factor both for dental caries and obesity. Mytime Active is a British social enterprise with charitable objectives, working to improve the health and wellbeing of local communities. It runs and licenses MEND (Mind, Exercise, Nutrition...Do it!), an internationally established obesity treatment and prevention programme for children and families, which promotes healthy eating, physical activity and behaviour change.

**Aim:** To integrate oral health with healthy weight promotion in Mytime Active's updated MEND 5-7 and 7-11 year-old programmes, empowering children and families to establish effective oral hygiene practices and maintain good oral health.

**Methods:** It is proposed that dentists from a dental public health team will collaborate with Mytime Active to develop an oral health module for its MEND programmes, to deliver alongside existing nutritional information, physical activity and support for behaviour change. The module will focus on oral hygiene and dietary recommendations from Public Health England's 'Delivering Better Oral Health' toolkit and the British Society of Paediatric Dentistry's 'A practical guide to children's teeth'. It will also cover advice on finding a dentist and the value of regular attendance. In May 2017, the dentists will provide Mytime Active delivery staff with one day's training on the oral health module content. They will assist staff with planning how the module will be incorporated and taught across the series of MEND sessions. In June 2017 this module will be piloted in two MEND programmes in London that will each be supporting up to 12 families with overweight and obese children aged 5-11 years. Mytime Active will deliver weekly interactive sessions with these families over ten to twelve weeks. During the pilot, the dentists will remain a point of contact for Mytime Active, to enable continuing support. Initial evaluation of the teaching module will involve assessing the change in oral health knowledge and behaviours of all the families in the pilot from programme commencement to completion. Additionally, the dentists will run a focus group with staff who have taught the module, to inform future development and plan for roll-out across other MEND programmes.

*Since this abstract was presented in Vilnius on 9 June, it has been decided that the oral health module will instead be developed for MEND Mums, a weight management programme for post-natal mothers with children up to 2 years old. The aim is to support mothers establish effective preventive oral health practices with their children early in the life course.*

**Acknowledgement of sources of funding:** Health Education England (Thames Valley) Mytime Active

## 3675. Student's Perception of the Dental Profession in Lithuanian Universities

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**Aim:** The aim of this study was to examine undergraduate Lithuanian final year dental student perceptions about the dental profession in two Lithuanian universities.

**Methods:** This anonymous survey was distributed to all final year dental students from Vilnius University (VU) and Lithuanian University of Health Sciences (LUHS). The survey was approved by VU and LUHS head of dental departments and there was no need for ethical approval. Students in their final year of their dental programmes were examined in year 2015. The structured survey included Likert scale questions that consisted of five response items and visual analogue scale questions allowing responses within a 0-100% range. The statistical analysis used SPSS 20.0 for Windows: summary tables were created, chi square test, Kolmogorov-Smirnov test, Spearman's correlation analysis, t-test and Cronbach's alpha test methods were used to statistically analyse the results.

**Results:** The overall response rate was 95% with a 100% (N=29) response rate from the VU and 93% rate from the LUHS (N=106/114). Most commonly students agreed that their profession gives freedom to express themselves and improve their skills (82.1%, N=111/135), the decision to become a dental professional makes them feel safe (73.1%, N=99/135) and they put maximum effort to their studies (71.6%, N=97/135), while fewer Lithuanian dental students agreed that treating people is the most satisfactory activity (61.6%, N=83/135). There were significant difference between two universities, the LUHS students agreed significantly more that the dental profession gives freedom to express themselves and improve skills (83.8%, N=113/135) than the VU students (75.5%, N=22/29).

**Conclusions:** Lithuanian dental students from these two universities reported that they believed that their profession gives them freedom to express themselves and improve their skills and makes them feel safe with their choice of profession.

## 3695. Impact of Government Policy on Access to Dental Care for Vulnerable Groups.

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**Background :** Since 1 October 2015, Belgium dentists are no longer allowed to use third-party payment for people who are not "increased reimbursement beneficiaries" but who are nevertheless caught in a temporarily difficult financial situation and should also be considered as vulnerable groups.



**Aim :** To investigate the impact of the abolition of third-party payment on access to dental care for vulnerable groups in deprived neighbourhoods in the city of Ghent.

**Methods :** The proportion of increased reimbursement beneficiaries in three primary health care centres and one dental office, integrated in a primary health care centre, was tracked during the years 2014 to 2016. The Chi-square test was used to compare differences between the years. An increase in the proportion of increased reimbursement beneficiaries can be equated with a decrease of other vulnerable groups.

**Results :** During the years 2014, 2015 and 2016 32,794 patients were registered in the three primary healthcare centres. 3,294 (31.8%), 3,554 (32.8%) and 4,217 (36.4%) were “increased reimbursement beneficiaries” respectively. Over these three years 5,302 of them visited the dental office. In 2014 620 out of 1,675 (29.9%), in 2015 505 out of 1,443 ( 35.0%) and in 2016 948 out of 2,158 ( 43.4%) were “increased reimbursement beneficiaries”. Both in the health care centres and in the dental office a statistically significant increase was observed in the proportion of increased reimbursement beneficiaries. This increase was higher for the dental office.

**Conclusion:** The abolition of the use of third-party payment for other groups, then the increased reimbursement beneficiaries, caused a change in dental attendance resulting in lower attendance for other vulnerable groups than increased reimbursement beneficiaries. It seems that fewer patients belonging to these vulnerable groups, who do not enjoy the benefits of an increased reimbursement and therefore cannot benefit from third-party payment, to have access to dental care.

## Session 1d. Oral Health Promotion.

# 3496. An Oral Health Promotion Programme for a Rural Community in Peru

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**Aims:** Dental caries is a highly prevalent and preventable disease that affects virtually the entire Peruvian population. This disease has become a public health issue. It constitutes a major problem for the Peruvian government due to budget regulations, and health related inequalities, which allows only a privileged few access to proper dental care. The aim of this abstract is to report a short-term oral health promotion project for a rural community in Peru.

**Methods:** This project was implemented in November 2015 in Porcon, a rural community, with one preschool, one primary and one secondary school. The children's parents gave written consent before the clinical evaluation and preventive treatment. Ethics approval was given by the Peruvian University of Applied Sciences. All the children of the three schools were invited to take part. The activities included assessing the history of dental caries (dmft/DMFT index) by one of nine calibrated examiners, providing education in oral health, and focusing on preventive care for children (fluoride varnish application, prophylaxis and glass ionomer sealants). This model is based on the premise that children in preschools, primary and secondary schools spend most of their walking hours in the institution; allowing for the assessment of the severity of the disease, risk factors, and harmful habits.

**Results:** Three hundred and twenty five children (82%) of those on the schools registers took part. Those who did not take part were either absent on the days that the schools were visited or their parents did not give consent. Oral health education sessions were given to all the children before the clinical assessment. The age of the children in preschool (n=46) ranged from 3 to 5 years, with a mean dmft of 6.28; the age of elementary school children (n=122) ranged from 6 to 12 years, with a mean dmft of 4.8 and DMFT of 1.54; and the age children in secondary (n=157) school ranged from 13 to 17 years with a mean DMFT of 4.96. The preventive treatments delivered were 166 fluoride varnish applications, 103 prophylaxis and 40 glass ionomer sealants. The parents and teachers attended a session on oral hygiene and eating habits.

**Conclusion:** This programme fosters an opportunity for integrated approach to health care, and is the first step in reducing health inequalities in rural communities in Peru.

The presenter of this abstract (3496) received a Borrow Travel Award

**Acknowledgement of sources of funding:** Funded by Peruvian University of Applied Sciences (School of Dentistry) and the community of Porcon, Cajamarca which provided food and accommodation for the entire team while the project was being implemented. Toothbrushes and tooth paste donated by Colgate Peru (Bright smiles, bright futures programme). Watch summary video on <https://youtu.be/Hie7N6m6RBA>

## 3497. Effectiveness of Oral Diseases Prevention in Mentally Disabled Patients

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Mentally disabled people comprise ~3% (4.5-5 million people) of Russia's population. These people are at high risk of oral disease due to poor oral hygiene skills, low motivation and limited dental care access.

**Aim:** The aim of the study was to evaluate the oral health status and the effectiveness of a preventive programme for mentally disabled people.

**Methods:** In 2008, one hundred and fifteen 18-49-year-olds from a mental hospital in Moscow, with different degrees of mental disability: mild (n=23), moderate (n=61), and severe (n=31), were examined by three calibrated dentists. Over nine months 21 patients with mild mental disability participated in the programme, which included training in oral hygiene, professional tooth-cleaning, and local fluoride application. Dental caries was assessed by DMFT, periodontal status by CPI and plaque accumulation by PHP indices. The t-test was used to compare differences in mean scores. Participants filled out questionnaires before and after the programme. The study was approved by the Ethical Committee of Moscow State University of Medicine and Dentistry.

**Results:** The results of the study showed that mean DMFT in the 18-25-year-old patients with mild, moderate and severe mental disability was  $5.93 \pm 0.34$ ,  $9.12 \pm 0.45$  and  $10.42 \pm 0.40$ , respectively ( $p < 0.001$ ); the corresponding figures were  $11.12 \pm 0.62$ ,  $11.50 \pm 0.64$  and  $17.24 \pm 0.81$  in the 26-33-year-olds ( $p < 0.001$ );  $13.90 \pm 0.68$ ,  $15.83 \pm 0.82$  and  $17.80 \pm 0.95$  in 34-41-year-olds ( $p < 0.01$ );  $19.32 \pm 0.99$ ,  $19.53 \pm 0.98$  and  $22.48 \pm 1.07$  in 42-49-year-olds ( $p < 0.05$ ). The mean number of missing teeth increased with age in patients with mild (from  $0.63 \pm 0.11$  to  $15.13 \pm 0.74$ , ( $p < 0.001$ )) and severe (from  $4.30 \pm 0.26$  to  $19.70 \pm 0.81$ , ( $p < 0.001$ )) mental disability. The mean number of healthy periodontal sextants decreased from  $2.17 \pm 0.18$  in 18-25-year-olds to  $1.12 \pm 0.11$  in 41-49-year-olds ( $p < 0.001$ ). The programme resulted in a decrease in dental plaque accumulation in patients with mild mental disability from  $4.45 \pm 0.42$  to  $2.21 \pm 0.28$  ( $p < 0.001$ ). The mean number of healthy periodontal sextants increased from  $2.15 \pm 0.16$  to  $3.57 \pm 0.21$  ( $p < 0.001$ ) with a reduction in the number of sextants with gingival bleeding (from  $1.88 \pm 0.13$  to  $1.06 \pm 0.12$ , ( $p < 0.001$ )) and dental calculus (from  $0.90 \pm 0.08$  to  $0.34 \pm 0.06$ , ( $p < 0.001$ )). Results from the questionnaire showed an increase in people who claimed to clean their teeth twice daily (from 29 to 85%), use mouthwash (from 2 to 63%) and dental floss (from 0 to 37%). The number of respondents who claimed they no longer fear dental treatment increased from 33% to 100%.

**Conclusion:** A high prevalence of dental caries and periodontal diseases suggests that mentally disabled people should be encouraged to take part in a preventive programme for improvement of oral hygiene skills and motivation to maintain oral health care.

The presenter of this abstract (3497) received a Borrow Travel Award

## 3499. A Two Years Caries Prevention Programme in Primary School Children Using Mineralised Varnishes

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**Aim:** The aim of this study, which took place between 2014 and 2016, was to compare the clinical efficiency of mineralised varnishes for the prevention of dental caries in first permanent molars in children in two primary schools in Minsk.

**Methods:** All 98 children, aged 9 years, who attended two schools in one randomly selected district of Minsk were divided into test (one school) and control (the other school) groups. Children in the test group were subdivided into sub-groups A (n=33) and B (n=33). Sub-group A had 5% NaF and tricalcium-phosphate containing varnish twice a year, sub-group B 5% NaF varnish. Children in control group (n=32) were examined with the same frequency. Regional Ethics Committee approval and parental informed consent were obtained. Six children in the control group and 12 (4+8) in test groups dropped out after two years. Caries preventive efficiency of varnishes was estimated by the indicators dental caries increment and reduction in numbers of carious teeth and surfaces after 24 months. The resulting data were statistically analysed using the chi-square test.

**Results:** There were no statistically significant differences regarding mean number of erupted permanent teeth (10.7, 12.0, 12.1), mean DMFT value (0.82, 0.84, 1.03) and DMFS (1.0, 1.0 and 1.25) between the two test and the control groups at baseline. After two years the number of permanent teeth increased to 15.7, 17.2 and 17.1 in the test and control groups respectively. An increase in the extent of dental caries and surfaces affected was observed in all groups. The increment in caries experience by DMFT and DMFS indices in test groups were: A (0.7; 1.0) and B (0.64; 0.84) and they were significantly lower compared to the control group (0.9, 1.2)  $p < 0.05$  and 1.47, 1.2 ( $p < 0.001$ ). The reduction in dental caries experience in terms of DMFT was 21.4% for the fluoride and tricalcium-phosphate varnish group and 28.02% for the fluoride-containing varnish group. In terms of DMFS this was 32% and 43% respectively.

**Conclusions:** The study results have shown the comparable caries preventive efficacy of mineralized varnishes on permanent teeth after two years of prevention.

The presenter of this abstract (3499) received a Borrow Travel Award

## 3506. Awareness about Preventive Dental Care among a Group of Paediatricians

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**Aim:** Paediatricians could play an invaluable role in the maintenance of optimal dental health in infants, children and adolescents. The aim of this study, which was carried out in September 2016, was to assess Istanbul paediatricians perception of basic oral health care in children.

**Methods:** A questionnaire survey was carried out among 26 Paediatricians (10 male;16 female) in the University Hospital in Istanbul. It consisted of questions on various aspects of knowledge, attitude, and role of paediatricians in preventive dental care. The data were collected and percentage frequency distributions for responses to every question were calculated. In Turkey for health staff surveys such as this one, ethics approval is not required.

**Results:** Twenty three(89%) of the participants reported that paediatricians are responsible for infant oral health and they routinely examine the oral cavity of their patients. Most of them 17(65%) never recommended bottle feeding at any time. All of the paediatricians reported that they gave nutritional counselling to the parents. They all said that they believe in prevention of oral diseases and 18 (69%) that they agreed with Topical Fluoride applications. Moreover, 19 (73%) considered Fluoride and Fissure Sealants to be effective for caries prevention

**Conclusion:** In the present study, the paediatricians showed reasonable awareness regarding the prevention of dental caries and they all supported oral health activities and the promotion of good oral health hygiene.

The presenter of this abstract (3506) received a Colgate Travel Award

## 3511. Trend of Tooth-brushing Frequency in Baltic and Nordic Countries in 1997-2014

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**Aim:** The aim of this study was to describe the trend and differences in toothbrushing frequency in the Baltic and Nordic countries between 1997 and 2014.

**Methods:** The study was a part of the Health Behaviour in School-aged Children (HBSC), a WHO collaborative cross-national study which was completed every fourth year. Altogether 235,135 pupils with mean ages of 11.6, 13.6, and 15.6 years completed an anonymous standardised questionnaire during school hours between 1997/1998 and 2013/2014. School classes were used as clusters and samples were nationally representative except in the Russian Federation.

**Results:** The highest prevalence of more-than- once-a-day tooth-brushing was found in Sweden (83%), Denmark (77%) and Norway (74%), and the lowest in Latvia (49%), Lithuania (50%) and Russia (54%). Over time prevalence of recommended tooth-brushing behaviour increased in six countries (from mean 40–70% to mean 50–74%). The largest improvement was found in Finland among 11-year-old boys and girls (25%/24%) and among 13-year-old girls (23%). In Lithuania, the mean figure for improvement was +10%. Over time, brushing frequency deteriorated in four countries (from mean 52–86% to mean 49–83%). The largest deterioration was found among Russian 11-year- old girls and boys (-15%/-10%) and among 13- year-old boys (-13%). In all countries and across all study years, gender differences were clear with girls brushing more often than boys. The largest gender difference was found among 15- year-olds in Finland (28%), Latvia (25%), Estonia (24%) and in Russia (22%), and the smallest difference in Sweden (6-7% for all age groups). Adoption of a recommended

tooth-brushing habit increased by age among girls, but in most of the countries, 15-year-old boys brushed less frequently than 11-year-olds.

**Conclusions:** In this study, differences in tooth-brushing frequency between the Baltic and Nordic countries diminished over time but still remained quite large. Gender difference was obvious in most of the countries.

## 3515. Effects of Communication Sensitive to Oral Health Literacy: A Randomised Controlled Trial

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Oral health literacy describes the capacity to obtain, process and understand oral health information, and is recognized as an important determinant of health. Numerous conceptual models of health literacy are presented in the literature, although very few have been empirically validated.

**Aim:** The aim of the study was to test Nutbeam's Conceptual model of health literacy as a risk in a clinical dental setting. Based on the model, we hypothesized that patients addressed with communication sensitive to oral health literacy will improve their gingival status and oral hygiene compared to the patients addressed with communication not sensitive to oral health literacy.

**Methods:** A convenience sample was recruited from the waiting list for the University Dental Clinic, Tromsø, Norway. Participants had to be older than 20 years, have no severe visual impairment, and speak Norwegian. Individuals returning signed consent forms by mail, after receiving written information and invitation to participate in the study, were called to the dental clinic for study participation. In a randomised, examiner- and participant-blinded, controlled clinical trial. A sample of 133 adults were randomly allocated to experimental group (n=64, 54% women, mean age 50 years) and control group (n=69, 49% women, mean age 46 years). In order to detect medium-size effects (Cohen's  $d = 0.5$ ) with a power of 0.80 ( $\alpha = 0.05$ , two-tailed) a priori sample size power calculation was conducted. A stratified randomization was done to balance the control and experimental groups for age. In the experimental group, communication was tailored to patients' oral health literacy levels using suitable communication techniques. Communication with the control group was not adapted to oral health literacy level. The Adult Health Literacy Instrument for Dentistry (AHLID) was used to assess oral health literacy level. Gingival status was the primary outcome variable, and oral hygiene status the secondary outcome variable. The clinical measurements were conducted pre- intervention and 6 months post-intervention. The study was registered in [clinicaltrials.gov](https://clinicaltrials.gov) (ID: NCT 01118143). Ethical approval was granted by the Regional Ethical Committee. A Cohen's  $d$  of 0.2 was considered a small effect, 0.5 a medium effect and 0.8 a large effect.

**Results:** Two participants were lost to follow-up due to drop-outs in both groups, while an additional three participants were lost in the control group due to other reasons. The ANCOVA showed a significant between-group effect finding that the experimental group reduced the post-intervention mean gingival ( $p < 0.000$ ) and plaque index ( $p < 0.000$ ) significantly more than the control group when controlled for baseline index scores.

Adjusted Cohen's d indicated large effect sizes between groups in both mean gingival index (- 0.98) and mean plaque index (-1.33).

**Conclusions:** Although the conceptual model of health literacy as a risk has some limitations, communication sensitive to oral health literacy seems to have a positive effect on clinical outcomes such as gingival status and oral hygiene.

## 3521. Tobacco Use Prevention and Smoking Cessation in Romanian Students in Dental Medicine

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**Aims:** The WHO has stated that tobacco use is the single greatest cause of preventable death globally. The aims of this study were to assess: the smoking prevalence, its effect on dental health behaviour among students in Dental Medicine in Iasi, Romania and their attitudes in providing programs to patients for smoking cessation, using a newly developed Expert System.

**Methods.** For this purpose data available from the SANFACTOR project were used. A cross-sectional study of all 221 fifth grade students was conducted from December 2015 to April 2016. In this way artificial intelligence was used in order to develop an expert system in the field of doctor-patient dialogue using specific communication. Data including: DMFT, CPI and gum colour, tooth-brushing habits, etc. were collected. Multivariate logistic regression analyses were performed to study differences between smokers and non-smokers. This study was approved by the ethics committee of "Grigore T. Popa" University of Medicine and Pharmacy and all subjects consented. SPSS 19.0 was used for data analysis.

**Results.** The response rate was 99.8%, with 47% (n=103) males and 53% (n=117) females. The prevalence of smoking was 29.8%. Smoking was more prevalent among males (39% - n=40) than female students (16.6% - n=19). The multivariate logistic regression analysis showed some items that were different between smokers and non-smokers. Non-smokers tended to brush their teeth more often than smokers (OR 8.67, 95% CI 2.45-41.29) and were more concerned about the colour of their gums (OR 9.02, 95% CI 2.47-42.23). The percentage of students who answered that they want to learn how to conduct smoking cessation programs for patients was 58.5% (n=129).

**Conclusions.** It is necessary to provide lectures on tobacco use prevention as well as practical training programs about giving up smoking in the dental education curriculum. The SANFACTOR Expert System may contribute to the training and support of all people involved in tobacco control activities, including research, implementation and evaluation.

This study was supported by Romanian National Centre for Scientific Research.



## 3548. Conscious Sedation in Outpatient Practice – Evaluation, Impact on Children

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**Aim:** The aim of this pilot study was to compare coping in children with two methods of conscious sedation - inhalation nitrous oxide-oxygen mixture (N) and oral midazolam – a mixture of IV solution with syrup (M).

**Methods:** Ethical approval for the study and parental informed consent were obtained. Subjects were recruited from patients referred to the Paediatric Dentistry Department, School of Dental Medicine. Inclusion criteria were ASA I, II, no medical contraindications for N or M, intake of food and liquids limitation related to sedation (N or M). The sedation type was chosen with respect to indications and contraindications in EAPD guidelines. The following variables were recorded: Frankl behaviour rating scale (F) during an initial visit and after sedation (Outcome of Sedation Scale used for difference in F scores - OSS), presence of amnesia after sedation, type of procedure (restorations or extractions), dental status using dmft/DMFT and pain evaluation using the Wong Baker Faces scale (W). Parents were asked to complete a short questionnaire after sedation. Wilcoxon sign-ranked test ( $p=0.05$ ) was used to compare study groups.

**Results:** Altogether 129 children (66 M, mean age 5.07, 63 N, mean age 6.63) participated in the study.

Satisfaction with sedation did not significantly differ between sedation types ( $p = 0.60$ ). F increased after both sedation methods. OSS for M = 0.4, N = 0.8. 61 (92.6%) parents were satisfied with the course of the sedation in M group and 60 (95.7%) parents in N group. The relationship to the dentist was changed after N ( $p = 0.05$ ).

There was no change in relationship to cariogenic food in the group N ( $p = 0.77$ ), M ( $p = 0.86$ ) and tooth-brushing N ( $p = 0.48$ ), M ( $p = 0.19$ ). Reasons for sedations were not dependent on sedation type ( $p = 0.17$ ). Pain score was higher in M (3.6) than in N (1.8). Amnesia depended on OSS  $p = 0.02$ . 58 (91.3%) parents who would choose the same type of sedation if indicated, were in N group and 49 (74.1%) in M group.

**Conclusions:** A significant improvement in children's behaviour was found after both sedation methods. In the case of N inhalation the children's attitude to dentist improved. The presence of amnesia was related to changes in the behaviour scale, not to the sedation method.

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## 3653. Association between Dental Health Attitudes and Preventive Behaviour among Middle-aged Lithuanians

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**Aims:** To assess dental health attitudes and their association with preventive behaviours among middle-aged Lithuanian university employees.

**Methods:** A questionnaire survey was conducted among all 35-44-year old employees (n=862) of four Universities in Lithuania. Assessment of preventive dental health behaviours included reported preventive dental visits (check-ups) and reported frequency of tooth-brushing. Dental attitudes were assessed with 5 statements on a 5- point Likert scale from entirely agree (score 5) to entirely disagree (score 1). Data on demographic characteristics were collected and included: gender, marital status, education and income. Statistical evaluation was by ANOVA and Chi- square test.

**Results:** A total of 553 (64%) subjects responded of whom 79% (n=439) were women, 72% (n=397) were married/cohabiting, 82% (n=451) had a university degree. In addition, 39% (n=214) of the sample reported a medium household income, while 38% (n=210) were below and 23% (n=124) above it. A preventive check-up as the reason for habitual dental attendance was reported by 51% (n=282) of respondents, significantly more often by women (54% vs. 40%,  $p=0.011$ ) and by those with higher income (61% vs. 44%,  $p=0.008$ ). Of the sample 68% (n=374) reported brushing their teeth at least twice daily, significantly more often by women (73% vs. 50%,  $p<0.001$ ) and those with university education (70% vs. 57%,  $p=0.013$ ). The average sum score of statements on dental health attitudes assessment was 22.6 (SD=2.0, range 15-25). Higher scores for dental health attitudes were reported by those habitually visiting a dentist for preventive check-ups (22.9 vs. 22.3,  $p<0.001$ ) and brushing their teeth at least twice daily (22.9 vs. 22.0,  $p<0.001$ ), also by women (22.8 vs. 22.1,  $p=0.001$ ) and those with university education (22.7 vs. 22.3,  $p=0.028$ ).

**Conclusions:** In the population studied the women and subjects with university education demonstrated better dental health attitudes. Preventive dental health behaviour was associated with better dental health attitudes among middle-aged Lithuanians.

## 3679. The UK Soft Drinks Industry Levy: Implications for Health / Dental Health

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**Background:** The UK Government will introduce a sugar sweetened beverage (SSB) levy in 2018. The levy is a banded duty on soft drinks with a basic level tax at 18p/litre for sugar between 5-8gm/100ml and a higher level tax of 24p/litre for drinks greater than 8gm/100ml. The UK Office for Budget Responsibility forecast revenue of £500 million for 2019-20 and this will be hypothecated to fund physical activity and breakfast clubs in English schools. Although, the UK soft drinks industry levy has the potential to reduce both childhood obesity and improve overall dental and general health of a population by lowering average sugar consumption precise effects are uncertain. The authors undertook a rapid review of existing evidence to see if a levy might improve health and/or impact health inequalities.

**Aims:** To identify evidence on the effects of a SSB levy on health outcomes, review economic theory on tax influencing demand for a product, review evidence on the impact of the SSB levy on SSB consumption and identify evidence of the effect of SSB levy on health inequalities.

**Methods:** The NICE, WHO, Cochrane, DARE, and NHS EED databases were searched, with snowballing to identify articles on how taxation on sugar could improve population health. It was supplemented by a database and grey literature search. There are no ethics or consent issues.

**Results:** Estimates of price elasticity of SSBs suggest the levy can be effective in reducing consumption potentially leading to health improvements. Evidence suggests a price increase of at least 10% to 20% is necessary to demonstrate changes in SSB consumption. The levy may also lead to a reduction in health inequalities.

**Conclusion:** A mature literature of positive effects on consumption of a SSB levy was found. Precise estimates of health benefits could not be calculated. The results suggest that the dental profession should welcome the UK Soft Drinks Industry Levy.

## Session 2a. Oral Epidemiology 3 - Periodontology and Other Topics

### 3489. Romanian Dentists Knowledge of Factors for the Progression of Periodontal Diseases

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**Aim:** To explore the current knowledge of Romanian general dentists about risk factors for progression of periodontal diseases.

**Methods:** This study was part of an European survey and used a questionnaire which had been piloted in several countries, including Romania, where the study took place during 2015. The questionnaire had been translated and back- translated into Romanian. It was sent to a random sample of 1500 general dentists as an attachment to an email, which explained the purpose of the study and invited participation. A power calculation indicated that for a 95% confidence level that the study would be representative, responses from 332 dentists were required. All responses were anonymised so that no individuals could be identified. In Romania, ethics approval is not required for such studies of dentists.

**Results:** Overall 401 general dentists responded, mean age 36 years, of whom 253 (63.1%) were female and 148 (36.9%) male. The majority (348, 88%) worked in urban with 49 (12%) in rural areas. Dentists answers indicated that only 49 (12%) worked with a periodontologist and only 27 (7%) a dental hygienist. They considered important factors for the progression of periodontal diseases were smoking 384 (96%), poor oral hygiene 382 (95%), diabetes 368 (92%), systemic diseases 342 (85%), hormonal changes in females 307 (76%). They believed that use of medication 266 (66%), stress 258 (64%), AIDS 247 (61%), increasing age 244 (61%), cancer and cancer therapy 221 (55%) were less important in progression of periodontal diseases. Unfortunately, for this second group of questions, the numbers 80-99 (20%-24%), who did not answer were quite high.

**Conclusions:** In the population studied, those who responded indicated their openness to electronic surveys. Knowledge of risk factors such as smoking, poor oral hygiene, diabetes, systemic diseases, hormonal changes in females was good. However, knowledge of other risk factors was not so good and fewer answered these questions.

The presenter of this abstract (3489) received a Borrow Travel Award

### 3491. Salivary Levels of Matrix Metalloproteinase-8 in Incipient Periodontal Lesions

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**Aim:** The aim of the current study was to assess whether initial periodontal lesions could be associated with changes in salivary levels of matrix metalloproteinase 8 (MMP-8) in order to predict ,at early stages ,the progress of periodontal tissue breakdown.

**Methods:** In a cross-sectional study, which was conducted in March and April 2016, 30 patients, aged 19-34 years (mean age 26.7±4.23), with initial periodontal lesions, were recruited. Ethical approval was granted by the Ethics Committee of the University of Medicine and Pharmacy „Nicolae Testemitanu” and informed consent was obtained, prior to study, from the participants. They were each allocated into one of three groups according to mean clinical attachment loss (CAL) values: ≥1 mm (n=10), ≥2 mm (n=10), ≥3 mm (n=10). Periodontal clinical parameters such as periodontal pocket depth (PPD), CAL, bleeding on probing (BOP), plaque index (PI) were assessed for each patient at six sites per tooth. Unstimulated saliva was collected from each patient in Ependorf tubes, 2 ml each, and analyzed by the use of Quantikine ELISA test. Periodontal parameters assessments and saliva collection was performed by one clinician. Data were analysed using descriptive analysis and the Pearson correlation test.

**Results:** There was a direct significant correlation between the CAL and MMP-8 levels ( $p<0.001$ ). Level of salivary MMP-8 was significantly higher in third group (CAL≥3 mm) than in second (CAL≥2mm) and first (≥1 mm) groups of patients. Regarding periodontal parameters , there was a statistical correlation between PPD and MMP-8 levels  $rx=0.813$  ( $p<0.001$ ); BOP and MMP-8 levels  $rx=0.699$  ( $p<0.001$ ). A moderate correlation was found between patient's age and salivary levels of MMP-8  $rx=0.408$  ( $p=0.025$ ).

**Conclusions:** Clinical parameters such as PPD, CAL, PI, BOP are useful tools in periodontal diagnosis, but unfortunately they do not have a predictable characteristic. Saliva is an accessible and easily collected material, which contains a great number of various biomarkers of a potential use in the early diagnosis and screening of periodontal status.

The presenter of this abstract (3491) received a Borrow Travel Award

## 3510. Changes in Task Delegation of Oral Examinations in the Finnish PDS after Dental Reform in 2001

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**Aim:** Task delegation from dentists to auxiliaries in dental care has been considered to be a good tool for facilitating access to oral health care. The Finnish PDS employed 2200 dentists (38%), 1100 dental hygienists (19%) and 2500 dental assistants (43%) in 2013. This study aimed to investigate changes in task delegation of patient examinations during 2001-2013 in the Public Dental Service (PDS).

**Methods:** Using people's unique identifiers, data on patients, their dental visits, examinations and their treatment providers' profession were collected from the municipal databases in five PDS-units which used the same electronic patient registration and record system. These five PDS-units covered about 320,000 inhabitants. The National Institute for Health and Welfare gave ethical approval for the study. Permission to use local data was

received from the directors in the PDS units. Each individual's visits and examinations were grouped by year and by provider profession (dentist, dental hygienist and assistant) separately for the young (< 18 years) and the adults (18+ years).

**Results:** Altogether 214,482 examinations were conducted for 295,521 patients of whom 241,355 were examined at least once during the study period. In 2001, there were 76,508 and, in 2013, 125,691 examinations. In 2001, dentists provided 90%, dental hygienists 9% and dental assistants 1% of examinations. In 2013, the corresponding numbers were 79 %, 17% and 4%. In 2001, dental hygienists and nurses provided about 16% of all examinations for children and adolescents, 2% for patients of working age and 7% for the elderly. In 2013, the corresponding numbers were 38%, 11% and 14%. These auxiliaries had provided 18% of all examinations. The number of auxiliaries increased by 73% in 13 years.

**Conclusions:** In 13 years, the examinations provided by dental hygienists increased mostly among the children and adolescents. The increase is moderate compared with the increase in human resources. Dentists provided large amounts of treatment that could have been provided by less expensive personnel.

**Acknowledgement of sources of funding:** This study was supported by Institute of Health Insurance, Finland

## 3537.Dental Researcher: Who Analysed your Data?

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**Aims:** Statistical methods play an important role in medical and dental research. Therefore, the role of statisticians has become more important because of the increased use of more complex statistical methods. However, the authors seldom report who performed the statistical analysis. The aim of this study was to examine how often the contributor to statistical analysis was reported and if this was associated with the quality of statistical reporting and the use of advanced statistical methods in dental articles.

**Methods:** A total of 200 articles published in 2010 were analysed covering five dental journals: Journal of Dental Research, Caries Research, Community Dentistry and Oral Epidemiology, Journal of Dentistry and Acta Odontologica Scandinavica. Each paper underwent careful scrutiny for the use of statistical methods and reporting. A paper with at least one poor reporting item has been classified as "problems with reporting statistics", and a paper without any poor reporting item as "acceptable".

**Results:** A contributor to the data analysis was reported in 33 (16.5%) of the articles. When the data analyst was reported, 13 (39.4%) of the articles were classified as acceptable compared with 32 (19.2%) among those who had not reported who undertook the data analysis ( $p=0.014$ ). Advanced statistical methods were used in 19 (57.6%) of the articles that reported who carried out the data analysis and in 44 (26.3%) of the articles where no information was given on the data analyst ( $p=0.001$ ).

**Conclusions:** Reporting who carried out the data analysis was associated with higher proportion of acceptable papers. Thus the journals should include in the articles a section for contributors where it would be stated who performed the statistical analysis. This should improve the quality and reporting of statistical analysis as the named contributors take the responsibility of the analysis.

## 3540. The Effect of Endurance Training on Dental Health Status: Competitive versus Non-Competitive Rowers

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**Aim:** The aim of this study was to investigate the effect of endurance training on dental health status, and to determine any difference between competitive and non-competitive rowers.

**Method:** The study population was composed of 45 volunteers: 25 competitive rowers (test group) and 20 non-competitive rowers (control group) who were the members of Galatasaray Rowing Team in the 2016 season. Volunteers had an oral examination by the same dentist. Dental status was evaluated using decayed, missing and filled teeth (DMF-T). Also, dental erosion was evaluated by using the BEWE Index. A self-administered questionnaire was used to collect data including hours and frequency of weekly training, eating habits and intake of sport and energy drinks, tooth-brushing habits and dental attitude. The study was approved by the Ethics Committee of Marmara University. Data obtained during the survey were stored in a database (SPSS 21) and tested for possible statistically significant differences using the Mann Whitney U test and Chi-square test. A *p* value <0.05 was considered statistically significant.

**Results:** The rowers mean age was 15.4 years (range 11-18), and the mean sports career was 3.3 years. All the competitive rowers practiced every day and the majority of their practice was for more than two hours. Furthermore, 16(80%) of the non-competitive rowers practiced more than two days every week, and 15(75%) of them practiced for one hour each day. The mean DMF-T score was 2.6 (D:1.5, M:0.1, F:1.0). Moreover it was 2.8 in competitive group, and 2.4 in non-competitive group. The DMF-T score was not statistically significantly different between competitive, and non-competitive groups. Thirty eight (84%) of rowers did not drink energy drinks, and 35(77%) rowers did not drink sport drinks. Dental erosion was not observed in both groups.

**Conclusion:** There was no difference in the dental health status of young competitive and non-competitive rowers in the Galatasaray Rowing Team. One reason that endurance training had no effect on tooth decay and erosion might be attributed to the young age of the rowers and their short sport careers.



## 3551. Big Data: a Case Study of its Use in Dental Public Health

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Today, in a hyper connected world nearly everyone leaves digital tracks of their activities, life style and behaviours. The intensive development of the Electronic Health Records (EHR) and the wide use of computer systems in health care systems are generating huge amounts of health data. The challenge is the re-use of these data for research purposes. The exploitation of health big data will allow better prevention based on knowledge of patients behaviour, implementation of more efficient diagnostic tools and improvement of care. This should lead to more efficient use of health finance and enhanced access to healthcare. The exploitation of big data is a major issue for public health and dental public health.

**Aim:** The aim of this abstract is to describe the integration of dental EHR data in a health data warehouse in order to make these data available for research.

**Methods:** In France, the Health Big Data research team has developed and implemented a biomedical data warehouse (EHOP) - which contains the EHR data of 1.5 million patients seen at Rennes University Hospital. The data contained in these databases are semantically poor and can only be efficiently exploited with the use of additional knowledge systems which allow for the description and annotation of the data. These knowledge systems include classifications describing diagnoses (such as ICD-10, SNOMED-CT, DDS: Dental Diagnostic System), interventions and procedures (such as Common Classification of Medical procedures (CCAM) in France or International Classification of Health Interventions (ICHI) at the international level) and drugs knowledge bases (such as Vidal, Thériaque). Dental care data have been integrated in the EHOP warehouse. The Dental Care Centre at Rennes University Hospital has been generating electronic care data since 2008. These structured and unstructured data provide a significant amount of information about dental diagnoses and care. The initial phase of the project was the integration of ICD-10 and SNO-DDS for diagnoses, CCAM and NGAP for procedures and Thériaque for drugs) and when needed (for all non coded data), the mapping of dental EHR data with these tools allows it to be coded.

**Results:** The EHR data of the University of Rennes Dental Care Centre, generated since 2008, were integrated into the University Hospital data warehouse (EHOP) during 2016 and thus have been made available to the end-user for research purposes. Research can now be performed on both medical and dental care data. Patients or hospital stays can be retrieved based on structured data, which include diagnoses or treatment provided. Patients' full medical and dental records have also been made available through full text request tools. It is expected that numerous retrospective studies based on these data will now take place. For example, analysis of the dental or/and medical data will provide information on dental treatments (survival analysis of endodontic

treatments, fixed prosthesis versus implants, etc), on possible links between oral health and general health and will allow health economic studies and comparison of actual practice with guidelines.

**Conclusion:** The availability of big data such as those collected by the University Hospital of Rennes provides exciting new possibilities for research locally, nationally and internationally.

## 3576. Prevalence of periodontal diseases in rural patients from the South-Eastern part of Poland

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**Aim.** The aim of this study was to assess the prevalence of periodontal diseases amongst an adult rural Polish population.

**Methods.** During one year, all patients of the specialist outpatient clinic at the Institute of Rural Health in Lublin, Poland, scheduled for a clinical examination, were invited to participate in the study. A total of 450 individuals (32.5% males; 67.5% females) who agreed to participate, completed a questionnaire and were examined for periodontal health status. Patients were allocated into three age groups:  $\leq 34$  years, 35-54 years,  $\geq 55$  years. The WHO 1997 criteria were used for diagnosis and recording of their periodontal condition, using a visual method with mouth mirrors and periodontal probes and daylight illumination. Periodontal status was evaluated by trained dental examiners using CPI so all teeth present in the mouth were checked for absence or presence of gingival bleeding, dental calculus and periodontal pockets. All Individuals gave informed consent and the study was approved by the Ethics Committee of the Medical University of Lublin. The data were analyzed by SPSS PL software. Significance of the differences was assessed using the Pearson chi-square test.

**Results:** A CPI score  $\geq 1$  was found in 427 (94.9%) of the examined population. The number of adults with gingival bleeding (CPI = 1) and with dental calculus (CPI = 2) was 23 (5.1%) and 187 (41.6%), respectively. Periodontal pockets (CPI = 3 or 4) were found in 132 (29.4%) of the patients. There were only 23 patients (5.1%) with CPI = 0 in all sextants. Most people 18 (21.2%) with healthy periodontium were in the youngest age group of patients.

**Conclusions.** The data obtained from this group of rural patients revealed a high percentage affected with gingivitis and/or periodontitis. The analysis of data can be used as a baseline for planning strategy of periodontal diseases prevention for adults in this rural region of Poland.

## 3690. Oral Health Assessment of Dental Students in Montenegro

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**Aim:** The aim of the study was to assess the level of oral health among dental students who attended the Faculty of Medicine at the University of Montenegro.

**Methods:** The study was carried out in 2013. and included 114 of the 120 students in the Faculty that year, who volunteered to take part. Their age was 18-23 years. The University deemed it unnecessary to obtain ethics approval for study. The study had two components. The first involved the completion of a questionnaire. This was followed by a clinical examination. Prior to receiving the questionnaire, the students were informed about the aims of the study and their confidentiality was assured. They then signed an informed consent form. The clinical examinations were performed by two calibrated examiners who achieved an inter-examiner kappa score of 0.93. The following clinical assessments were made: DMFT index and its components and CPITN. WHO (1997) methodology and criteria were followed and the students were examined under artificial light in a dental chair and their teeth had been dried.

**Results:** The average value of the DMFT index for the dental students in the sample was 9.2. Only, 9 students (7,9%) had a DMFT score of zero. Untreated caries was found in 58 teeth (5.5% of all teeth). There were 887 teeth that had been filled (84.6% of all teeth) and 104 teeth were missing (9.9% of all teeth). Thirty seven students (32.4%) had a healthy periodontium (CPITN = 0), 51 (44.9%) had gingivitis (CPITN=1), 17 (14.9%) had calculus present (CPITN= 2) and 9 (7,8%) had shallow periodontal pockets (CPITN = 3).

**Conclusions:** Periodontal health was generally better in these dental students than in the general population of 18 - 23 year-olds in Montenegro. However, the relatively high average DMFT score indicated that the students would have benefited from caries preventive services during their school or preschool years.

## 3740. The Association Between Periodontal Pathology and Systemic Health

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**Aim:** To assess the relationship between periodontal pathology and systemic diseases.

**Methods:** Data for the study were collected from medical records of patients who were treated at the Institute of Odontology, Faculty of Medicine, Vilnius University during the period from 2007 to 2015. Out of 3415 medical cases reviewed, 1442 cases met inclusion criteria and were selected for the study. Inclusion criteria were: age of 30 years and older, fully completed General Health Questionnaire, Periodontal Chart and/or Periodontal Health Index. The presence of diagnosed allergies, tumours, cardiovascular, endocrine, neurological, autoimmune,

gastrointestinal and pulmonary diseases was assessed. Periodontitis was diagnosed according to “CDC-AAP definitions for periodontitis” (Eke et al., 2012). As patients were not directly involved and could not be identified in the results, ethics approval was not required. The administration of the Institute of Odontology, Faculty of Medicine, University of Vilnius gave permission for access to the patient records. Statistical analysis was performed using “STATA 12.0” software (descriptive statistics, Chi-square test ( $\chi^2$ ), logistic regression).

**Results:** Out of 1442 individuals, 887 (61.5%) were female and 555 (38.5%) male. The average age was 46.8 ( $\pm 12.9$ ) years. 712 (49.4%) individuals were diagnosed with moderate or severe periodontitis. The overall amount of systemic diseases positively correlated with the severity of periodontitis in all age groups ( $p < 0.05$ ).

Independently of age, gender, smoking and alcohol consumption, moderate and severe periodontitis was associated with a higher risk of systemic diseases: blood coagulation disorders (OR=2.7;  $p=0.024$ ), high blood pressure (OR=6.7;  $p < 0.001$ ), arrhythmia (OR=8.2;  $p=0.018$ ), other cardiovascular diseases (OR=3.4;  $p=0.024$ ), diabetes (OR=2.9;  $p=0.003$ ), thyroid disorders (OR=2.2;  $p=0.009$ ), gastrointestinal diseases (OR=2;  $p=0.001$ ), benign and malignant tumours (OR=2.4;  $p=0.004$ ) and osteoporosis (OR=2.5;  $p=0.046$ ). No association between periodontitis and infectious diseases (pneumonia, bronchitis, sinusitis, tuberculosis, hepatitis), autoimmune diseases (psoriasis, systemic lupus erythematosus) or allergies was found.

**Conclusions:** In the population studied, moderate or severe periodontitis was associated with increased risk of having systemic diseases and a higher number of comorbidities compared to gingivitis or mild periodontitis.

## 3774. Oral Health Status and Treatment Needs of Children with Cerebral Palsy in Istanbul

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**Aim:** Cerebral palsy (CP) is a descriptive term covering a number of conditions with various degrees of severity. The development of an early diagnostic procedure for better management of cerebral palsy is necessary for various medical and dental applications (Mani et al., 2015). The aim of this study was to determine oral health status of a group of Turkish children with CP who were aged between 4 and 18 years. The study was thus designed to improve the understanding of the oral and dental aspects, socio-economic factors and their relationship to oral health status of CP in paediatric patients.

**Methods:** Oral findings in a group of 60 children suffering from CP were compared with those from an age and sex matched control group consisting of 60 individuals, who had no systemic diseases. Oral health status was determined by collecting data on dental caries, oral debris, gingival health, saliva (buffering and pH) by using specific tests and indices. Medical and dental history and socio-economic status were assessed for each subject. The results were statistically tested using the Mann Whitney U test. The Marmara University ethics committee approved the study and parental consent to take part was obtained for each subject.

**Results:** Sixty one (50.8%) male and 59 (49.2%) female children and adolescents were examined. No statistically significant differences were found in the means for: DMFT (CP group:  $1.85 \pm 1.86$  and control group:  $1.37 \pm 1.82$ ; ( $p = 0.158$ ), or dmft (CP group  $5.3 \pm 4.89$  and control group  $4.04 \pm 3.750$ , ( $p: 0.235$ ). The mean Debris Index in the CP group was  $62.42 \pm 26.92$  and in the control group  $59.77 \pm 25.31$ ; ( $p = 0.539$ ). The mean scores for the Gingival Bleeding Index of Gjermo and Moe (1983) were: CP group  $0.8 \pm 2.73$  and control group  $0.62 \pm 1.77$ ; ( $p = 0.453$ ). For saliva buffering capacity the mean scores were CP group  $4.5 \pm 2.75$  and control group  $4.91 \pm 2.33$ ; ( $p = 0.469$ ). The mean value for saliva pH was lower in the CP group than in the control group

( $p=0.006$ ). **Conclusions:** In the population studied those with CP had a greater risk of developing oral and dental pathologies than those from the control group, drawn from the general population. In order to improve the oral health status of children with CP there is a need for caregivers to undertake education in preventive dentistry and to help those with CP to maintain oral health.

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## Session 2b. Oral Epidemiology 4

### 3479. Specific Tool for the Measurement of Iranian Adolescents' "Attitudes toward Tooth-brushing"

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**Aim:** This study aimed to evaluate a new questionnaire on Iranian adolescents attitudes toward oral self-care.

**Methods:** The study took place in Isfahan city in 2015. After pooling possible questions, the primary version of the questionnaire was checked by an expert panel in order to determine its content validity index. The face validity was evaluated in a convenience sample of 20 fifteen year-olds. A power calculation was then performed. It indicated that a sample of 200 randomly selected adolescents aged 13 - 18 years would give a with 95% confidence level that it was representative of the population. However, in the event, due to local constraints, the sample of 200 13-18 year-olds was non-randomized and purposefully selected to include 13 - 18 year-olds from four areas of the city, the inhabitants of two of which were predominantly of high socioeconomic status and in the other two, of low socio-economic status. Ethical approval and informed consent were achieved prior to study. The reliability coefficients and the attitude score were calculated. The construct validity was evaluated using exploratory and confirmatory factor analysis. A range of statistical tests, which will be described in a poster were applied to the results.

**Results:** The final version of the questionnaire included 40 items which achieved a Cronbach's Alpha score of 0.7. One hundred and ninety six (98%) completed the questionnaire. They had a mean age of 15.9 years and a mean attitude score of  $112 \pm 12.1$  out of a possible a possible score of 160. The correlation between attitude score and social status was statistically significant ( $p=0.03$ ). In exploratory factor analysis the Kaiser-Meyer-Olkin measure of sampling accuracy was over 0.6 and the Bartlett test was significant and five factors accounted for about 38% of the total variance. The suggested model consisted of sub-domains like values (appearance, function), affects (positive, negative, neutral, threatening life), parent's effect, social impact and knowledge of caries was acceptable after applying the confirmatory factor analysis, with a moderate goodness of fit.

**Conclusions:** In this study, the "attitudes toward oral self care" questionnaire for Iranian adolescents was reliable and valid in content and construct.

**Acknowledgement of sources of funding:** Research Deputy of Isfahan University of Medical Sciences

The presenter of this abstract (3479) received a Borrow Travel Award

### 3487. Prevalence of Tooth Agenesis among the Macedonian Population

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**Aim:** The aim of the study was to estimate the frequency, distribution and characteristics of hypodontia of permanent teeth in the Macedonian population according to sex, type of the tooth, and their localization (maxillary or mandibular dental arch).

**Methods:** A sample of orthopantomographic (OPGs) radiographs of 10,000 ethnic Macedonian patients was selected from the data base of the Department of Orthodontics at the University Saints Cyril and Methodius Skopje, Faculty of Dental Medicine. They covered a ten year period (2005-2015) and the patients concerned were aged from 9-25 years. Criteria for selection of the patients were their age and ethnicity. The study was conducted in 2016. Because there is usually evidence of the presence of third molars in children after 8 years of age, the OPGs of patients from 9-25 years of age were selected.

**Results:** The survey revealed that hypodontia was seen in 240 (2.4%) of the OPGs assessed; 110 (1.1%) of males and 130 (1.3%) of female subjects. The teeth that most frequently missing were mandibular second premolars which represented 75(31.3%) of all missing teeth in the OPGs that were assessed. Of these 13 (16. 9%) were on the left, and 11(14. 3%) were on the right side. Maxillary lateral incisor is second –with absence of 67(27. 8%). Overall there was no significant difference in the extent of hypodontia between males and females. Hypodontia was almost equally distributed in both dental arches, but it was more frequent on the left side in both jaws. Maxillary second premolars were absent in 27(11.3%) of the OPGs. Mandibular central incisors were absent in 19 (7.9%) of the OPGs and mandibular lateral incisors in 6 (2.5%). Symmetrical tooth absence was more common and was seen in 146 OPGs, whereas asymmetric tooth absence was seen in 94. Unilateral tooth absence in maxillary dental arch was associated with hypodontia of lateral incisors 41 (61.2%) and second premolars 9 (55.5%). Bilateral and unilateral absence of second premolars in the mandibular dental arch was seen in 57 (76%) and 44 (58.7%) respectively.

**Conclusions:** Hypodontia is one of the frequent developmental dental anomalies seen in Macedonians. It leads to aesthetic, functional and psychological problems. Its early diagnosis guides clinicians to a appropriate orthodontic and prosthodontic treatment. An OPG, taken for all children at 8 -9 years of age, should be one of the standard dental procedures which will provide an early diagnosis of the condition. Results from the current study have stimulated Macedonian dentists to consider prosthodontic-orthodontic strategies in order to prevent complications arising from hypodontia and to avoid them.

The presenter of this abstract (3490) received a Colgate Travel Award

## 3505. Dental Caries Experience among 15 Year Old School Children from Macedonia and India

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**Aim:** The aim of the present study was to compare the dental caries status of the 15-year-old children of the southeast region of Macedonia and the Pandipora District of the Kashmir Division of Jammu and Kashmir State, India.

**Methods:** In this comparative study, which took place in 2013 in Macedonia and in 2014. In both Macedonia and India, the sample of 15-year-old children (565 in Macedonia and 1024 in India) was selected using a multi stage random sampling technique. The study was approved by the Ministry of Health in Macedonia and the Chief Medical Officer for the relevant district in India. Consent was obtained from the headmasters/mistresses of the schools involved. Participant's dental status was evaluated using the 2013 World Health Organisation caries diagnostic criteria for decayed, missing or filled Teeth (DMFT) by two calibrated examiners in Macedonia and by the single examiner in India.

**Results:** The mean value of the DMFT index for the whole sample in India was  $1.72 \pm 0.25$  whereas for Macedonia it was  $3.43 \pm 3.01$ , and the difference was statistically significant ( $p < 0.001$ ). In the Indian sample, 132 (26 %) and in Macedonia sample 106 (19 %) of the children were caries free (DMFT=0). In both countries, the female children had higher mean DMFT values. The filled component of DMFT was higher among the Macedonian children, who had higher utilisation rates of dental care in comparison to their Indian counterparts.

**Conclusions:** The mean DMFT of children from Macedonia who took part in this study was higher in comparison with children from India. The most likely reason for this can be the fact that sugar consumption in India was less in comparison with Macedonia.

The presenter of this abstract (3505) received a Borrow Travel Award

## 3507. Caries Prevalence of Children in Kosovo

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**Introduction:** Dental caries is a disease that affects all age groups, most commonly children. Dental caries in preschool and school children represents a health and a social problem, especially when the provision of preventive measures and the provision of treatment are poor.

**Aim:** The aim of this study was to determine the prevalence of caries among children in Kosovo, expressed by the DMFT/dmft-index.

**Methods:** Between 2005 and 2008, a large sample of 4290 children (2- to 14-years old) were randomly selected from different kindergartens and schools in Kosovo municipalities. Dental caries was evaluated using standard WHO (1997) oral survey methods. The teeth were clinically examined by six calibrated examiners with standard dental instruments using a visual-tactile method under a standard dental light. The numbers of decayed, missed, and filled teeth (dmft/DMFT) were recorded. The examiners were calibrated, to achieve inter-examiner reliability measured by the kappa index. The resulting data were entered in Statistical Package for Social Sciences (SPSS

13) and statistically tested with either the Chi-squared test or one-way ANOVA. The level of statistical significance was set at  $p=0.05$ . The study was approved by the Ethics Board of the University Dentistry Centre of Kosovo and consent was obtained from the parents of the children and the managements of the schools involved.

**Results:** The six examiners achieved an inter-examiner reliability score of kappa = 0.92. The total number of preschool children examined was , 1400 and in this group , the prevalence of dental caries was 91% and the mean dmft was 5.4. The lowest mean dmft was found in the 2 year olds (2.1), and the highest in the 5 and 6 year olds (7.9 and, 7.5 respectively) . The prevalence of Early Childhood Caries was around 21% with mean dmft of around 11. There was no significant difference between gender ( $p<0.005$ ). In the 2890 school children who were examined the prevalence of dental caries was 90%. The mean DMFT of these school children was 6.3. The greatest contribution to the DMFT index was untreated caries, which varied from 2.0 for 7-year-olds to 6.4 for 14-year-olds. The mean DMFT of school children increased with age, with a statistically significant difference between the age groups, ( $p<.001$ ).

**Conclusions:** High mean dmft/DMFT values in Kosovo children, according to the WHO criteria for oral health assessment, are alarming and suggest the need for emergency measures to improve the current situation. Since dental caries represents a serious medical and public health problem in Kosovo, a major preventive programme for oral health promotion is needed.

The presenter of this abstract (3507) received a Borrow Travel Award

## 3546.Socioeconomic Determinants of Dental Status in Adolescents in Małopolska Province

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**Aim:** To assess the potential association between socio-demographic (place of residence, type of school attended, level of parents education and material status of the family) and behavioural (hygienic habits, health knowledge) factors and overall dental status in 18 year-olds in Malopolska province, Poland.

**Methods:** The study was performed in 2008. The sample contained 210 (122 females and 88 males) 18-year-olds randomly selected students from high schools and vocational schools. Depending on the DMFT value three groups were distinguished with: low (0 – 7 teeth), moderate (8-10 teeth) and high (>11 teeth) levels of caries. The students were asked to complete a questionnaire addressing the family social background, individual oral hygiene practices, frequency of dental appointments, and they also rated the importance of dental status for general health. Statistical analysis was based on chi squared tests for trend. The study protocol was approved by the Medical University of Warsaw Bioethics Review Committee.

**Results:** Adolescents living in urban areas had lower DMFT than those living in small towns/villages ( $p=0.001$ ). Higher DMFT was found in students whose parents had lower education level and lower family income ( $p=0.020$ ). The type of school was also an important factor, with higher DMFT among vocational schools students compared to high school students ( $p=0.0001$ ). Students' good knowledge of caries prevention ( $p=0.006$ ;  $p=0.021$ ), choice of dentist ( $p=0.030$ ) and receiving oral health information from the dentist ( $p=0.012$ ) were also associated with lower DMFT. No association was found between DMFT and the frequency of dental attendance, type of dental surgery providing the treatment, or sex.

**Conclusions:** The living environment (city versus village), high parent's education level and family income, as

well as oral health knowledge and favourable health behaviours were associated with better dental status (lower DMFT) among adolescents in this sample.

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## 3641. Dental Avoidance among Adolescents - a Case-control Study

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**Aims:** This study aimed to investigate the pattern and background of dental avoidance among adolescents 16-19 years in the Swedish system of free dental care.

**Methods:** From lists of booked and missed dental appointments during the year 2012, 522 cases with avoidance behavior and 522 matched controls without were identified. Data on oral health status, dental treatment, fear or behaviour problems, medical or psychological factors, tobacco use or other documented factors of potential explanatory value were recorded from dental records 2009-2012 according to a pre-specified protocol.

Descriptive statistics, non-parametric and parametric bivariate tests (ongoing) and logistic regressions (ongoing) were applied. The study was approved by the Regional Ethical Review Board and was performed in accordance with the principles stated in the Declaration of Helsinki.

**Results:** In total, 3,090 of 23,522 (13.1%) booked appointments were missed, with a higher proportion among boys (1,842/12,619; 14.6%) than girls (1,248/10,903; 11.4%;  $p < 0.001$ ). Cases with avoidance behaviour 2012 had poorer oral health status i.e. more often dentin caries (327 (63.0%) vs. 245 (46.9%);  $p < 0.001$ ), gingivitis (249 (48.1%) vs. 142 (27.2%);  $p < 0.001$ ), extraction experiences (94 (18.0%) vs 60 (11.5%);  $p = 0.003$ ), and more often recordings of dental fear or behaviour problems (75 (14.4%) vs. 34 (6.5%);  $p < 0.001$ ), tobacco use (138 (26.5%) vs. 85 (16.3%);  $p < 0.001$ ). Those who were dental avoiders also had more previous signs of avoidance (308 (59.0%) vs. 137 (26.2%);  $p < 0.001$ ) than the controls. Logistic regression analyses in five steps revealed that social load, dental disease and appointments discriminated for dental avoidance in 2012.

**Conclusions:** To enable good oral health and a continuation of regular dental care, it is necessary to pay more attention to each adolescents' individual situation and to be observant of early signs of avoidance.

**Acknowledgement of sources of funding:** Supported by grants from Public Dental Service, Region Örebro County, Sweden.

## 3643.Cultural Identity and Caries Experience in Adolescents

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**Aim:** Currently, the number of migrants in European countries is substantial and still growing. As previous studies have shown, the acculturation process may influence immigrants' health status. However, limited evidence is available to support the association of acculturation and oral health status, and more specifically, caries experience in immigrants. Therefore, the aim of this study is to explore the relationship of cultural identity and dental caries among 15-16-year-old schoolchildren.

**Methods:** With permission of the East London and City Local Research Ethics Committee and the primary investigators, data from phases 1 (11-12 years of age) and 3 (15-16 years of age) of the Research with East London Adolescents Community Health Survey (RELACHS) will be used for secondary analysis. RELACHS included a sample of adolescents from 28 state secondary schools in East London, which was selected by using stratified two-stage cluster sampling. Final sample sizes were 1,382 in phase 1 and 1,030 in phase 3, of whom 689 children participated in both study years and had oral clinical examination in phase 3. The cultural identity will be assessed by the children's preferences for friends and clothing in phase 1, using the four strategies of acculturation defined by Berry. In phase 3, DMFT was measured for the full mouth as well as for second molars only, the latter used for longitudinal analysis assuming these were sound in phase 1 of the survey (at time of eruption). Other variables which will be considered in the analysis are demographic characteristics, socio-economic status, language spoken at home and dental behaviours. The association between cultural identity and dental caries will be assessed in count regression models using SPSS software, and the role of demographic, socioeconomic and behavioural factors on this association will be evaluated using sequential modelling.

**Results and Conclusion:** Data analysis will be conducted between March and May as part of the MSc in Dental Public Health programme that the presenter is currently enrolled in; results will be available by the end of May and, therefore, in time for the conference.

**Acknowledgement of sources of funding:** Kings College London, UK

## 3649.Association between Dental Caries Polarization and Behavioural Risk Indicators among Lithuanian 15-year-olds

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**Aim:** The aim of this study was to assess the association between behavioural risk indicators and caries polarisation among 15-year-old adolescents in Lithuania.

**Methods:** A cross-sectional study was performed in the year 2014. A multistage cluster sampling method was applied to obtain a representative sample. A dental examination was performed using WHO (1997) methods. Oral hygiene was assessed using the Plaque Index of Silness-Löe (1964). The adolescents were asked to complete an anonymous and voluntary self-administered questionnaire on conceptions related to oral health. The participants were dichotomised using the Significant Caries Index (SiC positive – a mean DMFT of the one third of study population with a highest caries score and SiC negative), tooth brushing habits (at least twice a day/once a day or less/) and dental attendance (regular/irregular). The Kaunas Regional Biomedical Research Ethics Committee approved the study and all participants' parents gave their written consent. The differences between groups were explored using t-test, chi-square, Mann-Whitney tests and multivariate logistic regression model with the oral hygiene, DMFT, tooth brushing frequency, dental attendance as outcomes.

**Results:** A sample of 1,127 15-year-olds were involved. mean DMFT was 2.58 (SD 2.62) with significantly higher values in SiC positive 5.09 (SD 2.29) than in SiC negative group 0.86 (SD 0.83),  $p < 0.001$ . The mean plaque index was 1.15 (SD 0.69) with no significant difference between the groups: SiC positive 1.18 (SD 0.7) and SiC negative 1.12 (SD 0.68) ( $p = 0.25$ ). Two dental caries risk indicators independently associated with a SiC positive outcome were identified: tooth brushing frequency (OR = 1.788 [95% CI: 1.002–3.192]) and reporting dental a visit in the last 12 month (OR = 1.668 [95% CI: 1.134–2.454]).

**Conclusions:** Infrequent tooth brushing and irregular dental attendance should be considered as a dental caries risk indicators and may have an impact on caries polarisation.

**Acknowledgement of sources of funding:** The study was funded by Lithuanian University of Health Sciences

## 3659. Dental Erosion, Prevalence and Risk Factors in Swedish Adolescents

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**Aims:** To investigate the prevalence and risk factors of dental erosion among adolescents in Stockholm County.

**Methods:** This cross sectional cohort study was conducted during 2010-2011, at three clinics of the Public Dental Service in Stockholm County. Fifteen and 17 year old adolescents (1335) who had scheduled their regular dental health examination were asked to participate. From these a representative sample of 1071 individuals, 547 males and 524 females were enrolled in the study. Presence of erosive wear was diagnosed (yes/no) on marker teeth by trained dentists/dental hygienists and photographs were taken. The adolescents answered a questionnaire regarding oral symptoms, dietary and behavioural factors. Two calibrated special dentists using the Simplified Erosion Partial Recording System (SEPRS) performed evaluation of the photographs for severity of dental erosion. The Regional Ethical Review Board in Stockholm approved the study and informed consent was

obtained from all participants. Data analyses were carried out using Statistical Package for the Social Science (Version 22), an independent t-test and Chi-Square test.

**Results:** In the population studied dental erosion was clinically diagnosed in 147 (28.3%) of 15 year olds and 189 (34.3%) of 17 year olds. Severe erosive wear was found in 220 (18.4%) adolescents based upon the intraoral photographs. Dental erosion was more prevalent and severe among males than females. The presence of erosive lesions correlated significantly with soft drink consumption ( $p<0.001$ ), the use of juice or sport drinks as thirst quencher after exercise ( $p=0.006$ ) and tooth hypersensitivity when eating and drinking ( $p=0.012$ ). Furthermore, self-assessed gastric reflux was a factor strongly associated with dental erosion ( $p<0.001$ ).

**Conclusions:** The results from this study indicate that erosive wear is common among adolescents in Stockholm County and is associated with both internal and external risk factors. Registration of dental erosion should be a part of the regular dental health examination.

**Acknowledgement of sources of funding:** This project was supported by grants from The Public Dental Service, Stockholm County Council, Praktikertjänst AB, The Female Dentist Club and The Swedish Association for Paediatric Dentistry.

## 3669. Trend of Income-related Inequality of Untreated Dental Caries in South Korea

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**Aims:** The rate of Korean National Health Insurance (KNHI) coverage for dental health is around 15% (OECD, 2016), and the low coverage is a major barrier affecting access to dental care. The aim of the present study was therefore to examine trends in income-related inequality in untreated dental caries in South Korea.

**Methods:** Cross-sectional data were obtained from the Fourth (2007-2009) and Sixth (2013-2015) Korea National Health & Nutrition Examination Survey. A nationally representative sample of 21,197 from KNHANES IV and 17,543 from KNHANES VI, over the age of 5 years who participated in the health interview and dental examination were used. Dental examination data for deciduous cares in 5- to 10- year-olds and permanent caries in children (6-11 years), adolescent (12-18 years), adults (19-64 years), the elderly (65 years and older) by trained dentist-examiners were analyzed. Household income was monthly household equivalent income, which is obtained from household income / (the 0.5 power of the number of household members). Trends were studied using indices for both the absolute and relative size of socioeconomic inequalities in dental caries. Age standardized rates, Slope Index of Inequality (SII) and Relative index of inequality (RII) were calculated by SAS statistical software.

**Results:** Age-standardized prevalence of untreated dental caries decreased in all age groups between 2007-2009 and 2013-2015, while deciduous caries among child aged 5-10 did not decrease. Income related inequalities decreased in permanent teeth, but not in deciduous teeth, among Korean children. The absolute and relative level of socioeconomic inequality in untreated dental caries remained virtually unchanged in adults. Meanwhile, relative level of socio- economic differences in dental caries have increased over time in adolescent and the elderly group.

**Conclusions:** In the study population, since oral health inequalities still exist at all ages, policies and interventions to reduce socioeconomic inequality in dental caries especially among adolescents and adults, need to be developed in South Korea. It is necessary to expand the dental care coverage of national health insurance and to form a social discourse on oral health inequality in South Korea.



## Session 2c. Oral Health - Quality of Life

### 3495. Oral Health Related Quality of Life and Psychological Well-being in Electro-industry Workers in R. Macedonia

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**Introduction:** The World Health Organization describe Quality of life as “an individual’s perception of their position in life in the context of the culture and value system of which they live with the relation to their goals, expectations, standards and concerns”. Measures of oral health related quality of life (OHRQL) capture non clinical aspects of oral health that people seem most relevant to their overall health and well- being.

**Aim:** The aim of the present study was to determine the association between OHRQoL and psychological distress in a sample of electro- industry workers in Macedonia.

**Methods:** Cross-sectional design. The study sample was randomly drawn with simple random sampling from a larger group of workers from the electro- industry, when they attended obligatory periodical medical examinations at the Institute of Occupational Health of RM in Skopje. The study was conducted in the period September- October 2016. A questionnaire survey was carried out to assess the OHRQoL and psychological well- being of these workers, by using the Oral Impact on Daily Performances (OIDP) Questionnaire and the General Health Questionnaire (GHQ-28), respectively. Participation was voluntary and consent to participate was given during completing and returning questionnaires. The relationships between the OIDP scores and psychological well- being dimensions were tested using bivariate analyses.

**Results:** A total of 170 male workers (N=170) with a mean age of  $45.6 \pm 9.0$  years participated in the study. The highest single mean OIDP scores for daily performances were detected for eating ( $3.5 \pm 3.4$ ) and cleaning teeth/dentures ( $2.2 \pm 2.5$ ). The most frequent oral problems perceived by workers were tartar (31.2%), tooth pain (21.8%) and decayed teeth (19.4%). The impact score for eating showed a significant positive correlation with the Somatic GHQ score ( $r=0.179$ ;  $p=0.019$ ), the anxiety GHQ score ( $r=0.230$ ;  $p=0.003$ ), and the Social GHQ score ( $r=0.152$   $p=0.048$ ).

**Conclusions:** This study found that in the group studied OHRQoL was strongly associated with somatic and social well-being as well as insomnia and anxiety. It showed that psychological distress in the workers was related to poorer OHRQoL. It is therefore suggested that public health authorities should take the periodic use of the OHRQoL examination into consideration in order to improve psychological well-being in workers.

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## 3500. Cross-cultural Adaptation and Validation of Child-Oral Impacts on Daily Performance in Romania.

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**Background:** Countries such as France, Spain, Greece, Italy, England and Thailand use the Child-Oral Impacts on Daily Performance (OIDP) for planning community oral health programmes for children. No data on dental oral health-related quality of life for children exist in Romania.

**Aim:** Therefore, the aim of the forthcoming study, reported in this abstract, will be to conduct cross-cultural adaptation and validation of Child- OIDP index.

**Methods:** In order to achieve this aim, there will be two main steps. The first is cross-cultural adaptation and linguistic validation in Romanian. The second is oriented to the psychometrical validation of the instrument by testing reliability and validity. In order to achieve an optimal conceptual equivalence the forward-backward-forward translation methodology will be used. Two translators will work independently. They are a native Romanian with an excellent command of the English language and an English native with fluency in Romanian language. They will assure the translation process. The final version of the translated questionnaire will be evaluated by the relevant academics and then a pre-test will take place. For international harmonization and to ensure conceptual equivalence, an international expert on the Child-OIDP index will be involved. The final version of the translated instrument will undergo a validation study to obtain more information about its psychometrics properties. The validation study will be a cross-sectional study including 200 children aged 10-11 years, of both genders, in Timis county. The sample will be stratified and from a range of schools both urban and rural. Teachers will be asked to obtain written informed consent from the parents and the questionnaire will be administrated in class time. Ethics approval for the study will be sought from the Ethics Committee of the University of Medicine and Pharmacy "Victor Babes" Timisoara. Consent will be sought from the relevant school authorities. The resulting data will be entered into SPSS 22. To ensure confidentiality, all questionnaires will be identified by a number which will be kept separate from the personal identification of participants. The internal consistency of the questionnaire will be assessed using Cronbach's Alpha coefficient. The test-retest reliability will be assessed using the same sample of 200 children who will complete the questionnaire for a second time 3 months after its first application.

The presenter of this abstract (3490) received a Borrow Travel Award

## 3501.Parameters of Oral Cavity Condition among Patients with the Pathological Refluxes

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Oral health can be influenced by pathology in the gastro- intestinal tract. One such problem that has an effect in the oral cavity is Gastroesophageal reflux disease (GERD) which, according to the WHO has the 40% prevalence among the population of the globe.

**Aim:** The aim of this study was to compare indicators of the oral health status between patients with two types of GERD and with those of patients without GERD.

**Methods:** The study took place in 2015/2016 and was approved by the local Ethics Committee of Moscow State University of Medicine and Dentistry. It involved 47 patients aged 18-70 years (average age of 38 years), who were identified by the University Department of Internal Medicine. Patients were divided into three groups: Group 1-control (n=15); Group 2- patients with GERD with acid reflux (n=16); Group 3-patients with GERD with a slightly alkaline reflux (n=16). The following oral parameters were determined: pH and buffer capacity of saliva, the rate of salivary flow, the microbial composition of plaque on the tongue and the , OHI-S and , PMA indices. The results were statistically tested using students t test.

**Results:** OHI-S in Group 2 was significantly higher (2,47+-0,53) than in Group 1 (1,28+-0,72; $p<0,001$ ); in Group 3 OHI-S was higher than in Group 1, but to a lesser extent (2,04+\_0,96;  $p<0,01$ ). The PMA index data in Group 2 were 22,36+\_0,64 vs 12,44+\_0,44 in Group 1 and 20,77+\_0,23 in Group 3. The indicators of salivary flow rate in Group 2 were 0,26+\_0,74 vs 0,39+\_0,61 in Group 1 and 0,22+\_0,78 in Group 3. The results of other studies, including metering pH, buffer capacity of saliva and microbiological analysis are presented in the poster.

**Conclusion:** Significant changes in indicators of oral health were observed among patients with GERD with the pathological acidic refluxes. There appears to be a need to develop special measures for prevention and treatment of oral problems for such patients.

The presenter of this abstract (3501) received a Borrow Travel Award

## 3503.Oral Hygiene Behaviour among Children of 9 - 10 Years of Age

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**Aims:** Oral hygiene behaviour is an important predictor of oral health care. There has been research into children's oral hygiene behaviour, but it has taken place in a small number of countries. The aim of this study was therefore to identify the oral hygiene behaviour of children aged 9 -10 years who attended primary schools in a city in Romania.

**Methods:** The sample of 9-10- year- old children was selected from three different schools from the Timisoara area. The 443 children who were selected represented the entire population of third and fourth year children from the three schools in 2015/2016. The first school was from a rich neighbourhood (n=118 children). The second one was from downtown (poor neighbourhood) (n=184 children) and the third one from a middle class suburb (n=116 children). Twenty five of the 443 children were excluded because they were found to be 8 years old. This left a sample of 418 children aged 9 - 10 years. They completed a questionnaire with 37 closed and opened questions related to oral hygiene behaviour. The questionnaire had been tested on a pilot sample of 20 children and afterwards optimized and adapted for the study. The school authorities gave their consent for the study. Children whose parents gave negative consent were not examined. The study was given ethics approval by the ethics committee of the University of Medicine and Pharmacy "Victor Babes", Timisoara.

**Results:** Three hundred and seventy nine (92%) of the children declared that at least one person had talked to them about oral hygiene. There was a difference between girls 200 (95%) and boys 173 (88%) in the answer to this question.. The person who had given oral hygiene advice was one of the parents 330 (79%), a dentist 268 (64%) and, for only for 32 (8%) of the children another adult or a teacher 54 (13%). As far as knowledge of how to perform good oral hygiene was concerned, 207 (50%) children declared that they knew very well to brush their teeth, of whom 85 (43%) were boys and 118 (55%) were girls. In answer to a question on brushing after each meal: there was a difference between the boys and girls, as 37 (19%) of the boys and 58 (27%) of the girls claimed this behaviour.

**Conclusions:** In the group studied family or dentists were the most likely people to have advised the children on oral hygiene and there were differences in oral hygiene behaviour between the boys and the girls. It is suggested that more attention needs to be paid to boys when teaching good oral hygiene behaviour.

The presenter of this abstract (3503) received a Borrow Travel Award

## 3517. Self-perceived Oral health and Oral Health Problems after Gastric Bypass surgery

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**Aim:** The prevalence of obesity and weight loss surgery has steadily increased during the last decade. Therefore the objective was to examine how individuals treated for obesity with Gastric Bypass (GBP) surgery perceived their oral health and oral health related quality of life (OHRQoL).

**Methods:** All individuals in one Swedish region (one-sixth of the Swedish population) who had undergone GBP surgery in 2011 (n=1184) were sent a postal questionnaire two years after surgery. The questionnaire comprised items on socio- demographics, oral health symptoms and the Oral Health Impact Profile-49 (OHIP-49), an instrument with 49 questions about OHRQoL. The statistical analysis comprised descriptive methods (including mean values and SD) and analytical methods (Chi-squared tests and logistic regression models). The Regional ethics review board in Gothenburg approved the study and written consent was obtained from all participants.

**Results:** The response rate was 55% (n=653). The mean age (47.6 years, SD 12.0) was somewhat higher than in the total sample of GBP-patients (44.3 years, SD 11.8) while the gender distribution was similar. Twenty-six percent (n=165) experienced more oral health problems after surgery than before. Nine out of ten reported at least one oral impact experienced sometimes, fairly or very often according to the OHIP-49. The most frequent problem was tooth hypersensitivity (28%). Respondents with tooth hypersensitivity had 4.9 (95% CI 2.6- 9.4) times higher odds to report an oral impact experienced 'sometimes/fairly often/very often' compared with those without hypersensitivity, even after adjusting for age and sex.

**Conclusion:** In the population studied, a large proportion of individuals treated with GBP surgery reported problems with their oral health and impacts on their oral health related quality of life.

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## 3533. Peculiarities of Phonetic Adaption of Patients to Partial and Complete Removable Dentures

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**Aim:** The aim of the study was to evaluate the impact of removable denture design on patients' phonetic adaptation.

**Methods:** This cross sectional study was performed in "Medasko" between January 2014 and December 2016. One hundred and sixteen patients were randomly selected, 80 met the inclusion criteria and agreed to participate. The control group consisted of 50 age matched individuals without tooth loss. According to a pre-established protocol 650 standardized speech samples were video recorded and assessed. The study was approved by the Riga Stradins University Research Ethics Committee. Data were entered into SPSS 20 and statistical analysis was performed using the chi-squared and Fisher's exact tests. Odds Ratios (OR) were calculated. The significance level of  $p < 0.05$  was used.

**Results:** A reduced functional value (FV) of dentures was found in 42 (53%) of patients [28 Complete Dentures (CD), 14 Partial Dentures (PD)], these prostheses were fabricated more than 3 years ago (range 12-148 months). Lack of correspondence between the anatomical landmarks (papilla incisive, rugae palatine) and the position of artificial teeth in the dentures was found in 24 (30%), more frequently in patients with CD (20 (83%) and 4 (14%) with PD (OR 13.75.56 (95% CI 1.13 to 12.41)). Distorted speech was found in 7 (14%) of the control group and in 30 study group subjects: 22 (73%) CD, 8 (27%) PD ( $p = 0.004$ ). Out of 22 patients with CD and distorted speech

performance, 18 (82%) had dentures with reduced FV. In patients with clinically acceptable FV, speech distortion was found only in 4 (18%), similar to the control group 7 (14%). Alteration in extra oral anatomical landmarks during speech was found in 33 subjects- 3 (6%) control group and 30 (37%) study group ( 25 CD ( $p<0.001$ ), 5 PD ( $p=0.098$ )). Twenty nine patients (17 CD, 12 PD) ( $p=0.076$ ), 22(76%) had dentures with reduced FV and were unsatisfied with the result of their oral rehabilitation.

**Conclusions:** Functional value and the structure of the removable dentures have impact both on precision of speech production and patient's subjective evaluation of the result of oral rehabilitation.

## 3536.The Importance of Oral Hygiene Education in Behçets Syndrome

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**Aim:** Oral ulceration is a cardinal clinical sign causing poor oral health, and is found to be a risk factor for a severe disease course in Behçet's Disease (BD). The aim of this retrospective study was therefore to assess the importance of oral hygiene education in patients with Behçet's disease (BD) in long- term follow-up.

**Methods:** In this retrospective study, non-selected 143 BD patients were included. Among them, 93 patients were followed with dental and periodontal indices and oral hygiene education in each visit regularly (Regular follow-up (RF) group), whereas 50 patients were not under regular oral hygiene control (Irregular follow-up (I-RF) group). Changes in oral health parameters were examined according to two follow-up periods (short-term: <5 years vs long-term:  $\geq 5$  years). The study was approved by the Ethical Committee of Marmara University Medical School. Informed consent was taken. Paired t- test and un-paired t-test was used in the analysis.

**Results:** No significant differences were observed in periodontal indices between RF group and the I-RF group at baseline ( $p>0.05$ ). When the groups were analyzed according to short vs long follow-up periods, dental and periodontal health status was stable in both follow-up periods in RF group ( $p>0.05$ ). In contrast, the number of natural teeth decreased and the plaque index score increased during follow-up ( $17.1\pm 8.3$  and  $1.8\pm 1.01$ , respectively) compared to baseline ( $21.5\pm 6.4$  and  $1.3\pm 1.1$ , respectively) in the I-RF group in short-term follow-up ( $p=0.028$  and  $p=0.04$ ). In addition to these parameters, scores for the sulcus bleeding index, periodontal pocket depth and clinical attachment level were also worse at follow-up than baseline in the I-RF group in the long-term follow-up ( $p<0.05$ ).

**Conclusion:** In the non- random group of patients stability of oral health was accomplished in BD patients who attended regularly, and were provided with continuing oral hygiene motivation and education in long-term (> 5 years) follow-up. These results suggest that regular follow-up may affect the course of the disease, leading to a better prognosis.



## 3538. Oral Health Related Quality of Life in 10 - 14 Year-old Turkish Children

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**Aim:** The aim of this study was to evaluate the oral health related quality of life (OHRQoL) among children aged 10-14 years.

**Methods:** In this cross-sectional study, 100 children (53% female, mean age: 11.4±1.1 years) were sampled from the Paediatric Dental Clinic, Faculty of Dentistry, Marmara University. The study was approved by the Ethics Committee of Marmara University. Data were collected through a questionnaire regarding OHRQoL and dental indices. OHRQoL was evaluated through the Turkish version of the Child Oral Health Impact Profile (COHIP) questionnaire. Trained research assistants (n=2) who were not involved in any dental assessment or treatment helped to complete the questionnaires. Scores for COHIP and its subscales regarding “oral health”, “functional well-being”, “social-emotional well-being”, “school environment” and “self-image” were calculated. Better OHRQoL was indicated with higher COHIP scores. Criterion validity was evaluated by self-reported oral health status and self-reported dental treatment need. The associations between COHIP and toothache experience and reason for dental attendance were examined for construct validity.

**Results:** The mean COHIP score was 96.13 (SD: 15.14), ranging from 57 to 127. Internal reliability (Cronbach's alpha) of COHIP was found to be 0.847. Although oral health status was similar in both genders, the score for the “social-emotional well-being” subscale was lower in females than males ( $p=0.010$ ). Poor COHIP “functional well-being” scores were associated with toothache and sensitivity experience, halitosis, poor self-reported oral health status, dental treatment need, difficulty in chewing and delayed tooth eruption of permanent teeth compared to those without these conditions ( $p<0.05$ ). Scores for “oral health”, “functional well-being” and “school environment” scales were lower in those attending for emergency dental care compared to control visits ( $p<0.05$ ).

**Conclusion:** In this population, the Turkish version of COHIP was observed to be a valid and reliable tool that can be used in further OHRQoL studies.

## 3646. Monitoring of Dental Caries and Related Behavioural Factors Among Adolescents in Belarus

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**Aim:** To assess the trend of dental caries prevalence and associated factors in 15-year-old adolescents in Belarus over a fifteen year period.

**Methods:** In 2001-2004 an analytical epidemiological study of 370 school children (189 - 51% of whom were



males) aged 15-16 years (mean 15.8 years) was carried out in randomly selected schools and classes in Minsk city. An anonymous questionnaire was completed by every child. It comprised several questions concerning frequency of tooth brushing, type of toothpaste used, frequency of eating sweet products, attendance at the dentist and self-evaluation of oral health. In 2016, a similar survey was carried out involving 215 15-year-old school children (105 (49%) males) in randomly selected classes of the same schools. For both surveys ethical approval was given by the Minsk Health Committee and consent of school children and their parents was obtained. Chi-square and t-tests were used to statistically test the resulting data.

**Results:** A decrease in caries prevalence among 15-year-olds was observed in Minsk over the 12 year period: mean DMFT was  $5.6 \pm 4.3$  S.D. in 2004 and  $2.7 \pm 2.2$  S.D. in 2016 ( $p < 0.01$ ). Oral hygiene measured by OHI-S improved from OHI-S  $2.16 \pm 1.8$  S.D to OHI-S  $1.1 \pm 0.8$  S.D. ( $p < 0.05$ ).  $61 \pm 4.3$  % of surveyed students self-evaluated their oral health as “excellent” or “good” in 2016 vs  $42 \pm 2.6$  % in 2004,  $85 \pm 6.1\%$  vs  $79 \pm 2.8\%$  had attended a dentist within the previous year,  $65 \pm 5.0\%$  vs  $71 \pm 3.1$  % were brushing teeth twice a day,  $75 \pm 6.4\%$  vs  $51 \pm 3.4$  % used fluoridated toothpastes,  $49 \pm 5.1\%$  vs  $25 \pm 2.9$  % ate sweets daily,  $20 \pm 2.6\%$  vs  $15 \pm 2.4$  % often drank sweet beverages.

**Conclusion:** A meaningful reduction of dental caries in 15-year-old adolescents could be explained by improvement of oral hygiene and use of fluoridated toothpastes, as the most others behavioral factors did not improve between 2001-2004 and 2016.

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## 3648.Salutogenic Factors for Oral Health among Older People: an Integrative Review.

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**Aim:** The concept of salutogenesis has been the subject of research in different areas. However, no review has so far presented the concept within the oral health area. Therefore, the aim of this study was to comprehensively describe reported salutogenic factors associated with oral health in older people.

**Methods:** An integrative review was carried out using online databases: PubMed, CINAHL, ProQuest and Scopus. Ancestry and descendancy searches were performed as well as the quality assessment of the included studies. The reviewers used the Lalonde Health Field concept and the Antonovsky Theory of Salutogenesis to organise reported factors associated with better oral health (OH) and better oral health related quality of life (OHRQoL), for people aged 60 years and older. The health fields of Lalonde were cross- tabulated against

Antonovsky's generalized resistance resources (GRR), and extracted salutogenic factors were placed into the matrix to facilitate the analysis.

**Results:** The final analysis included 76 studies. Several factors could be associated with better OH and better OHRQoL. However, few factors were identified within a majority of health fields. There was lack of studies with an explicit salutogenic focus on people aged 60 and older. Most notable was the absence of research data on salutogenic factors within the Health Care Organisation field and macrosociocultural GRRs.

**Conclusions:** The matrix approach allowed the reviewers to combine the two theoretical frameworks and examine the congruence between the Health Fields and particular GRRs, as well as areas with a lack of research. The successful merging of Antonovsky's and Lalonde's frameworks indicates that they are based on a similar understanding of underlying mechanisms for interaction of salutogenic factors associated with OH and OHRQoL outcomes. This method of triangulation suggests a way of verifying a common understanding of salutogenesis.

## Session 2d. Other Topics

# 3488. Work-Related Musculoskeletal Disorders Among Bulgarian Dentists : Nature And Conducive Factors

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Musculoskeletal disorders (MSD) among dentists are the subject of a large number of studies, focused on pain experienced by the practitioners.

**Aim:** The aim of this study was to investigate the correlation between MSD-provoked pain and gender, age, length of service, daily workload, working posture and pain location.

**Methods:** In 2012- 2013 a total of 1300 pre-piloted questionnaires were distributed among randomly selected dental practitioners in six regions of Bulgaria. Participants were divided into the following age groups: 25-35 years– n=163 (23%), 36-45years – n=171 (25%), 46-55years – n=196 (28%), 56-65years – n=139 (20%), and 66+years -n= 29 (4%). Participants completed the questionnaire consisting of 27 items on the topics of: socio-demographic background, work environment characteristics, pain characteristics and types of pain management. Data were entered into SPSS version 17. Statistical analysis consisted of descriptive analysis and the chi-squared test. As no patient or animal was involved and the dentists anonymity was maintained and they were free to refuse or take part in the study, it was deemed unnecessary to seek ethics approval for the study.

**Results:** The response rate was 54% (700 dentists). The percentage of women, complaining of pain was significantly higher  $p<0.05$  (87%) compared to men (72%) and 689 answered this question. Five hundred and eighty four (82.%) of respondents experienced pain due to MSD. There was a statistically significant correlation ( $p<0.05$ ) between the type of musculoskeletal pain and length of service for the four periods of working that were listed in the questionnaire ( up to 10, 11- 20, 21-30 and over 31 years). The longer the length of service the percentage of affected subjects was higher- from 113 (71%) for dentists with up to 10 years service to 152 (91.%) for those having more than 31 years of service. Eighty three percent of dentists (n=268) who experience MS pain worked in a standing position and 106 (69%) - in a sitting position.

**Conclusions:** Amongst those who responded to the survey, women suffered from MSD significantly more than men. There was a significant positive correlation between the subjects' work week duration and MSD and between working posture and MSD.

**Acknowledgement of sources of funding:** The authors express their gratitude to the Bulgarian Dental Association for supporting this study.

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## 3492.Career Choice and Motivation of First-Year Dental Students

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**Aim:** The aim of this study was to determine first- year dental students' motivation and attitude for choosing to become dentists and to study at the Dental School, Marmara University, Istanbul, Turkey.

**Methods:** A questionnaire, consisting of students' socio-demographic profile and their motivation for choosing dentistry, was administered to first- year dental students. The study was conducted at the beginning of the 2016-2017 academic year. Simple descriptive analysis was undertaken using Microsoft Excel. In Turkey ethics approval is not required for surveys of health students such as this one, in which completion of a questionnaire is voluntary and anonymous.

**Results:** One hundred twenty one questionnaires were distributed, and completed by 119 first year dental students (78 female, 43 male). The majority of the students 80(66%) were self-motivated to choose dentistry as a career. Most of them 110(91%) reported that they did not have relatives in the medical or dental profession. For 76(63%) of the students the choice of dentistry was their own decision. Students explained their choice to become dentists by giving more than one answer: 9(7.5%) chose dentistry as a prestige profession, 19(16%) because it is humane and noble, 30(25%) for financial stability, and 14(12%) because it provides autonomy to the practitioner. Forty one(34%) considered that the dentistry is difficult to study and hard to practice. For 58(48%) of the respondents, health problems were a serious reason for interrupting their education. Only 11(9%) of the respondents would try to transfer to another university. The remaining 109(91%) responded negatively to the question.

**Conclusion:** Students' motivation and attitudes for choosing the dental profession should be considered when selecting and training them. Financial stability and 'prestige' were the predominant motivating factors in this group of first-year dental students. They considered that the dentistry is difficult to study and hard to practice. These findings may not be generalisable nationally as students sampled were enrolled in a single Faculty. Further research across different educational locations would be beneficial.

## 3504. Assessment of 5 and 10-years survival rate of oral cancer patients in Isfahan and determining the affecting factors

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**Introduction:** Oral cancer is considered as one of the few life- threatening oral diseases. The survival rate of this malignancy is affected by different patient and tumour related factors.

**Aim:** The aim of this study was to evaluate the 5 and 10-year survival of patients with oral cancer registered in two main centres in Isfahan for diagnosing and managing oral cancer patients.

**Methods:** All patients diagnosed with oral cancer (240), who attended the dental school of Isfahan university and the Syed al Shohada hospital during 2004-2009 were included. Demographic data of patients and data on tumour characteristics including site, histologic type, staging and treatment type were obtained. Survival curves were generated using Kaplan-Maier curves. Univariate and multivariate analyses of the relations between survival and the aforesaid factors were made using the log-rank test and Cox's regression analysis. The statistical significance of the tumour characteristics on survival was tested at the 0.05 ( $p=0.05$ ) level.

**Results:** The overall survival rate was 57.6% and 24.7% after 5 and 10 years respectively. Sex and staging of tumour were not correlated to survival. Age under 60 years ( $OR= 0.089$ ,  $p= 0.017$ ), involvement of sites other than the tongue ( $OR=0.24$ ,  $p=0.03$ ) and combined treatment versus surgery ( $OR=0.073$ ,  $p=0.004$ ) were significantly correlated to lower death rate.

**Conclusions:** Among the possible factors, both demographic (age) and tumour related factors and treatments were correlated to better prospects of survival of patients. Therefore, survival of patients is a complicated issue and needs to be considered by both the patients and the care providers for early detection and diagnosis.

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## 3513.Are 3D Models Suitable for Assessing Erosive Tooth Wear?

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**Aims:** To assess the usability of 3D models in erosive tooth wear assessment and the use of the Basic Erosive Wear Examination (BEWE) on 3D models.

**Methods:** In 2012-2013, a total of 1,962 members, (62%) of all those invited from the Northern Finland Birth Cohort 1966, accepted to participate in a standardized clinical dental examination including the Basic Erosive Wear Examination (BEWE) and dental 3D modelling in the Oulu dental clinic. Of those examined, 600 (31%) were randomly selected for this study. Selected 3D models were analyzed using the same BEWE criteria as in the clinical examination. Kappa values and the prevalence and severity of erosive wear, according to the clinical examination and 3D models, were compared. To calculate intra- and inter-method and -examiner agreements, re-examinations were performed. The Ethical Committee of the Northern Ostrobothnia Hospital District approved the study.

**Results:** The 3D models were straightforward to use and sensitive, especially with respect to finding those in need of treatment. Erosive tooth wear was assessed as more severe in 3D models than in the clinical examination. The use of the BEWE index on 3D models was reproducible and easy to adapt; the mean intra- and inter- examiner agreement Kappa values were both 0.9 for sextant level, and 0.6 and 1, respectively, for BEWE sum scores. Inter-method agreement was 0.4 for severe erosive wear (BEWE sum>8).

**Conclusions:** The assessment of erosive wear clinically and on 3D models is not entirely comparable due to highly detailed nature of 3D models. The BEWE index seems to be suitable and reproducible in the assessment of erosive wear on 3D models. The use of 3D models could offer an advantage in the assessment of erosive tooth wear compared with a clinical examination alone.

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## 3554. Prevalence of Psychological Health Disorders among Dentistry Students

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**Aims:** To investigate the prevalence of psychological health disorders among dentistry students and evaluate whether these disorders originated before or during dentistry studies.

**Methods:** A questionnaire survey was carried out among 3rd – 5th year dentistry students of Vilnius University (n=84), Medical University of Lublin (n=361) and UiT The Arctic University of Norway (n=28) in 2016. The study included students who had started dental practice with a patient. Final response rate was 78.8%.

**Results:** The majority of dental students (90.7%, n=427) felt that dental practice is psychologically difficult. Prevalence of psychological health disorders among dentistry students was high: 53.4% (n=251) suffer from mental exhaustion rarely or sometimes and 20% experience it chronically; 60.2% (n=283) suffer from nervousness rarely or sometimes and 15.7% are nervous on a chronic basis. The majority of disorders were acquired during their studies. Significantly fewer 3rd year students consider dental practice as psychologically difficult ( $p=0.003$ ); significantly fewer 5th year students felt nervous before working with a patient ( $p=0.04$ ) compared to other students. Significantly fewer students of the Medical University of Lublin suffered from nervousness ( $p=0.008$ ), mental exhaustion ( $p=0.002$ ) or experience stress during the work ( $p=0.009$ ) and felt nervous before the work with a patient ( $p>0.0001$ ), students of Vilnius University experience depression ( $p=0.032$ ) or anxiety ( $p>0.0001$ ) significantly more than students of other universities.

**Conclusion:** This study showed early emerging psychological health problems which affect dentists in their daily practice starting to develop during undergraduate dentistry studies. They could be the result of high demands for studies of the curriculum and the specificity of practical work with patients. Therefore it is necessary to teach dental students how to deal with variety of academic and occupational factors that affect their psychological wellbeing.



## 3555. Prevalence of Physical Health Disorders among Dentistry Students

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**Aims:** To investigate the prevalence of physical health related disorders among undergraduate dental students and evaluate whether these disorders originated before or during their dental training.

**Methods:** A piloted questionnaire survey with ethical approval was carried out among 3rd – 5th year dental students from Vilnius University (n=84), the Medical University of Lublin (n=411) and the UiT The Arctic University of Norway (n=105) in 2016. Informed consent was obtained. The study included all the students who had started clinical practice (n=600). The final response rate was 78.8% (n=473).

**Results:** The majority of dental students (90.2%, n=424) felt that dental practice was physically difficult. Physical health disorders were prevalent: 63% (n=296) suffered from back pain sometimes or rarely, 17.2% (n=81) experienced this disorder on a chronic basis. Additionally, 54.1% (n=255) suffered from hand pain, 7.6% (n=36) experienced this disorder chronically; 60.9% (n=287) complained of neck pain sometimes or rarely, 14.0% (n=68) experienced it on a chronic basis. There were no statistically significant differences in the prevalence of physical disorders between students from different year groups ( $p>0.05$ ). The difference in some health related complaints between students from different universities was found: significantly more in students of the Medical University of Lublin, who more frequently suffered from neck pain ( $p>0.0001$ ) and decreased sensation in fingers ( $p<0.0001$ ) than students from the other universities. These physical disorders could occur because treating patients in lying position is not obligatory for students in Poland, where students are taught to treat patients in both lying and sitting positions.

**Conclusion:** The results of this study indicated early emerging physical health problems among dental students - they started to develop these problems from the beginning of clinical practice during dental undergraduate training. Therefore it is necessary to teach dental students ergonomic principles and motivate them to follow ergonomic requirements in their daily practice.

## 3674. Dental Students' Attitudes towards Dental Specialties and Factors Influencing their Career Choices.

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**Aims:** To evaluate dental students' attitudes towards different dental specialties and to identify factors influencing their future career choices in terms of the most prospective field, best salary or most impact on society.

**Methods:** This cross-sectional study was conducted in May 2016 using a self-completed questionnaire which was distributed to all (85) 4th year dental students (aged 23-28) at Charles University in Prague, Czech Republic. Local Ethical Committee approval of the study was obtained.

**Results:** The response rate was 60% (n=51, gender split 35 F / 16 M). Students regarded prosthetics, implantology and periodontology as the most prospective fields of dentistry. There was no significant difference between male and female ( $p = 0.78$ ). Financial reward according to responders is best for implantology and then prosthetics, and again there is no difference between the sexes ( $p = 0.99$ ). Preventive dentistry, prosthetics and general dental practice, respectively were regarded as having the greatest contribution to society. However 35 responders (68%) decided not to specialize. Amongst those who plan to specialize a period of 3-5 years of general practice before taking a specialization is preferred. Students were not attracted to an academic career and there was no difference between the sexes ( $p = 0.40$ ). The most popular fields that students would like to pursue a career in, are general dental practice, implantology and prosthetics.

**Conclusions:** These data showed that there was no significant difference between perception of dental specialties between males and females. Specialties providing best future income or widest competencies are the most probable fields that students will choose for their future careers. Based on these results suggestions are made for ways to inform students about different dental specialty training, especially as they enter into their final year.

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## 3687. Britain Leaving the European Union: Possible Impacts on the UK Dental Workforce

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**Aims:** To outline the possible impact that Britain leaving the European Union (EU) (Brexit) may have on the dental workforce in the UK and how access to dental services could be affected.

**Methods:** Registration data were obtained from the General Dental Council (GDC), to identify the number of registrants from European Union (EU) member states other than the UK for dentists and dental care professionals (dental therapists, orthodontics therapists, dental hygienists, dental technicians, clinical dental technicians and dental nurses). All data were correct as of 31st December 2016.

**Results:** Out of 41,482 dentists on the GDC register, 6757 (16.3%) were from EU member states. Of the 6757, the largest numbers came from: Poland (792, 11.7%), Sweden (738, 10.9%), Greece (679, 10%), Spain (674, 9.9%) Romania (665, 9.8%) and Ireland (625, 9.2%). The number of dental care professionals (DCPs) on the GDC register from EU member states was 414(0.6%), out of a total number of 67,875.

**Conclusions:** It is unclear whether current EU registrants will be able to maintain GDC registration and if freedom of movement of the dental workforce will be permitted, but it would seem probable. The transferability and recognition of European qualifications for dentists and DCPs, routes of access to the specialty register and requirements for language testing will need to be addressed. Post-Brexit, dentists arriving from EU Member States, who wish to work in the UK, may well have to pass the Overseas Registration Examination (ORE) to gain GDC registration, and subsequently may need to complete the same post-qualification training as UK dentists, if they wish to work in the NHS. If dentists from other EU states currently working in the UK decide to leave, patient access to dental services may be affected, especially in rural areas where posts may remain unfilled. This may further reinforce inequalities in oral health, with an increase in waiting times to see a NHS dentist, profoundly affecting the NHS and private dental markets. Dental school intake numbers may need to be revised. It is unknown how many dentists from EU member states are working within academia in the UK but the potential restriction to the freedom of movement of academic and scientific staff and potential restriction of access to European clinical trial databases should be considered. However, Brexit may provide the opportunity for a more flexible approach to the development of the curricula for educating dentists and other members of the dental team. The relevant UK policy makers may need to consider these and other aspects when workforce planning once final Brexit regulations are confirmed.

## 3693. The Varying Costs of Undergraduate Dental Training in Europe

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**Aim:** To investigate the cost of tuition fees for undergraduate dental students in European countries.

**Methods:** In January 2017, a mixture of questionnaires and informal discussions with European qualified dentists was used to collect information. The questionnaire was distributed during a training session for European dentists who had recently migrated to the United Kingdom to work. The informal discussions were with members of the Executive Board of the EADPH during which the same questions as those in the questionnaire were asked. Dental school websites were also visited to confirm data from other sources and to gather further data.

**Results:** Data on tuition fees for dental undergraduates were gathered from 22 European Countries. In six there were no fees. In countries where fees were charged the amount usually varied from dental school to dental school. In eight countries the average annual tuition fee was less than €1000. In seven it was between €1000 and €5000 per year. In the remaining one, England it was €10,800. In a number of countries where fees were charged, a proportion of students who had the highest academic grades on entry did not pay fees as long as their annual examination results kept them in the top 25 - 40%. Some dental schools charged lower fees to students whose parents had a low annual income. In others, free travel passes and other benefits were given to dental students. In a number of countries there are private dental schools, where the fees are not subsidised by the State. Annual fees at these schools were far higher; as much as €50,000 at one.

**Conclusions:** The methodology for this survey can be criticised on the grounds that three methods were employed to gather data. However, within this constraint it has demonstrated a wide variation within Europe which begs further investigation.

## 3739. The Influence of Motivation on Academic Performance and Postgraduate Study Plans

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**Aim:** To assess the relationship between Vilnius University, Faculty of Medicine, Institute of Odontology students' motivation types, academic performance and willingness to enrol in a postgraduate programme.

**Methods:** One hundred and forty seven undergraduate dental students at Vilnius University were asked to fill in an anonymous questionnaire during March – May, 2014. One hundred and forty students agreed to participate (response rate – 95,2 %). The questionnaire consisted of demographic questions (gender, age, study year), “Academic Motivation Scale” and questions assessing students' academic performance as well as their plans to enrol in a postgraduate study programme. Research variables were: motivation type, academic results and postgraduate plans. In Lithuania as long as participation is voluntary and anonymous, ethics approval is not required for surveys of dental students. Statistical analysis was carried out using SPSS 21.0 (descriptive

statistics, independent variables t-test.).

**Results:** Extrinsic motivation was higher than intrinsic motivation among Vilnius University dental students. The highest rated motivation subtype was "Extrinsic motivation – identified" ( $p=0.009$ ). Students with overall grade value lower than 8 ( $p=0.011$ ), as well as students who have not conducted a voluntary scientific research project, rated extrinsic motivation higher than other students ( $p=0,018$ ). Meanwhile, students with best grades (9,5-10 points) ( $p=0.006$ ) and students, who conducted many scientific research projects (3 or more) ( $p=0.046$ ), rated "Intrinsic motivation - to experience stimulation" higher than other students. Moreover, intrinsic motivation was more prevalent among students who plan to continue studies in a postgraduate programme ( $p=0.009$ ). Sixty nine students expressed willingness to continue studies. Among these students 37 (53.6%) were from first and second years of the undergraduate course. No correlation between study year and motivation was revealed.

**Conclusions:** In the population studied extrinsic motivation was dominant and especially significant among students with lowest grades. Intrinsic motivation was related to highest grades, high number of scientific research projects conducted and willingness to enrol in a postgraduate programme.