



Abstracts from the 21st Congress of the European Association of Dental Public Health, 29th September - 1st October, 2016, Budapest, Hungary

Speakers' abstracts

REDUCING SOCIAL INEQUALITIES IN HEALTH IN EUROPE

Prof. Dr. Johan P. Mackenbach

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Reducing inequalities in health between socioeconomic groups within a country is one of the greatest challenges for public health, even in the highly developed welfare states of Europe. Recognizing this, several countries and the World Health Organization have set quantitative targets for reducing these inequalities. Since these targets were set, reports have appeared suggesting that inequalities in mortality have widened instead of narrowed. However, a systematic analysis of progress in reducing health inequalities has not been made. We therefore collected data from 11 European countries to assess whether there has been progress, and if so how much, in reducing inequalities in mortality in the period 1990-2010.

Our findings show that remarkable mortality declines have occurred in lower socioeconomic groups in most European countries, but that whether or not progress has occurred is very much dependent on the perspective chosen. Absolute declines in all-cause mortality were often larger in lower than in higher socioeconomic groups (with absolute inequalities narrowing as a result) among men, but not among women. However, relative declines in mortality were almost always smaller in lower than in higher socioeconomic groups (with relative inequalities widening as a result). Narrowing of absolute inequalities was mainly driven by ischemic heart disease, smoking-related causes (men only), and causes amenable to medical intervention, whereas setbacks with widening inequalities can be seen in many countries for alcohol-related causes.

Although, as these results show, recent trends in inequalities in mortality in Europe are more encouraging than commonly thought, they also raise important questions, such as whether the observed narrowing of inequalities in mortality can be interpreted as a beneficial effect of explicit policies, e.g. of national programs to reduce health inequalities. Unfortunately, the evidence suggests that that is not the case, and that wherever a narrowing has occurred this has been a side-effect of population-wide behavioural changes and improvements in prevention and treatment of conditions like cardiovascular disease.

Another, more fundamental question is whether in public health we should aim for reducing absolute or relative inequalities in mortality. Quantitative targets are usually ambiguous and do not specify whether relative or absolute inequalities should be reduced. Our findings show that since 1990 no country has achieved a reduction of relative inequalities in mortality, but that in terms of absolute inequalities some countries have even surpassed the 25% reduction target that the World Health Organization proposed. Should we be satisfied with reducing absolute inequalities in mortality, or keep striving for a reduction of relative inequalities as well?

PROPORTIONATE UNIVERSALISM. AN APPROACH TO REDUCE HEALTH INEQUALITIES

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Inequalities in health are clearly mirrored by the “oral health conditions”, and this starts already early in life. In a survey of children at the age of 30 months, there were clear social differences in the prevalence of “Early Childhood Caries”. Understanding that this means an important risk factor e.g. in relation to chronic conditions later in life, an appropriate strategy should be developed.

Based on the experience in the Community Health Centre “Botermarkt” in Ghent- Belgium, an exploration will be made of how a Community Oriented Primary Care approach, can be able to tackle the challenges. When it comes to strategy, we will indicate why “proportionate universalism”, as described by Sir Michael Marmot is an appropriate strategy in order to address social inequities in health.

These findings will be translated to education, practice and policy.

PATHWAYS TO ORAL HEALTH INEQUALITIES

Dr. Georgios Tsakos

Over the last 10 years, health inequalities have been at the centre of the public health research agenda. Relevant research has demonstrated the detrimental impact of inequalities on the health and well-being of populations and has shifted the policy debate towards addressing the social determinants of health. Like for general health, there are also inequalities for oral health. This lecture will first summarise the relevant evidence in relation to the extent and pattern of inequalities in oral health in Europe, with particular emphasis on data from national epidemiological studies. The overall picture reveals social gradients in oral health, but there are also variations according to the socioeconomic position measures and oral health outcomes employed (clinical and/or subjective measures of oral health and quality of life) as well as for different age groups. The main focus will be on exploring the role of the different pathways that may help explain oral health inequalities. The potential role of health behaviours, dental service / care provision, psychosocial factors, as well as the broader political factors will be discussed in that respect. Finally, the presentation will highlight key areas so that research can be translated into public health action towards addressing oral health inequalities.

IMPACT OF ACCESS TO HEALTH SERVICES ON ORAL HEALTH INEQUALITIES

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Professor, LDS

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The scientific literature shows that there are several pathways in which different types of health services may affect general health and oral health. Moreover, different factors contribute to the use of health services, in particular dental care. National and local organizational issues concerning dental care are important, both with regard to caregiver and patient perspectives. The output of a series of factors has been clearly associated with inequity in oral health among children and adults within and between countries.

The presentation will include theoretical, conceptual aspects, and models of health services and access to dental care, but also empirical findings of how access to dental care can have serious impacts on oral health in different countries and different dental care settings, and how oral health inequalities may develop.

EARLY CHILDHOOD DEVELOPMENT AS A PREDICTOR OF BETTER HEALTH OUTCOMES IN LATER LIFE

Dr. Bea Pászthy PhD

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Despite remarkable progress in health status and life expectancy in the developed countries over the past decades, large inequalities remain not only across countries but also across population groups in each country. These inequalities in health status are linked to many factors, including differences in exposure to risk factors to health and in access to health care.

Inequalities in health status are due to many factors, including differences in living and working conditions and in behavioral factors. Lifestyle behaviors (eg. nutrition habits, physical inactivity, obesity, smoking and alcohol drinking) are important risk factors for many diseases including diabetes, cardiovascular diseases and cancers and vastly affect oral health as well.

People in lower socioeconomic groups are more likely to smoke, be obese and be exposed to other important behavioral risk factors. Efforts targeting behavioral risk factors among disadvantaged groups can play an important role in promoting healthier lifestyles, offering individuals better choices, and reducing health inequalities.

A key focus should be early child development. Good early development is a predictor of better health outcomes in later life.

During pregnancy and the first few weeks and months of life, critical stages in the child's mental and physical development follow each other in rapid succession. Each stage serves as a foundation for the next. Any faltering in early childhood therefore puts at risk subsequent stages of growth and development.

There is an increasing number of mental health problems. One in five children and adolescents experience psychological conditions and/or psychiatric disorders.

People with mental illness have increased risk of dental diseases due to several factors: fear, habits, life-style choices, cost, distrust of dentists, negative past experiences or stigma felt at a dentist visit, lack of knowledge about oral hygiene, lack of awareness of their own oral health problems, side effects of certain medications. However many people living with mental illness, dental health may be a low priority. Oral symptoms may be the first or only manifestation of a mental health problem.

THE INEQUALITIES IN EARLY CHILDHOOD CARIES ACROSS EUROPE

Prof. Svante Twetman

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It is generally thought that early childhood caries (ECC) is a public health problem associated with impaired oral health-related quality of life and high costs for families and the society in general. There are numerous epidemiological studies available from various European countries and current ECC inequalities, not only across Europe but also within countries, are obvious. The burden of caries from different countries and regions can however not directly be compared with each other due to design, methodological and reporting issues. For example, there is no consensus on the definition of ECC, which age group(s)

that should be examined, sample selection techniques, calibration and number of examiners, inclusion of non-cavitated early lesions, with or without bitewing radiographs, etc. On top of that, small children are not always cooperative, allowing proper cleaning and drying before the examinations. Consequently, it is not surprising to find that prevalence of ECC, assessed with the WHO-criteria, can vary from 86% in Kosovo to 15% in Italy. Likewise, the prevalence of severe ECC seems to range between 3 and 12% across Europe. The mean dmft is reported to vary 0.9 from 10.9. In spite of the abovementioned limitations, it is possible to trace an increasing tendency in the prevalence of ECC from the north-western to the south-eastern countries of Europe. Within all European countries however, there is a clear relationship between socio-economic inequalities and caries; children to low-income and low-educated parents with and without immigrant background display a higher risk of having caries lesions early in life. Poor and near poor 2-5 year-olds have on average 3 times higher dft than non-poor children and this association can be even stronger in the most developed countries. A further problem is that the majority of the disadvantaged children remain untreated. As a first step to combat existing caries inequalities in preschool children, it is important to better map and understand the disease as well as main socio-economic and behavioral determinants. The reporting of ECC (prevalence and severity) in epidemiologic studies must be standardized and the importance of including 3 and 5-year-old children in periodical examinations should be underlined. The adoption of a validated scoring system that allows proper staging of caries lesions is another key factor that should be adopted.

Poster Presentation Abstracts

THE IMPORTANCE OF A GOOD WORKFORCE PLANNING (WP) IN REDUCING HEALTH INEQUALITIES

Dr. Sebastian Ziller

Introduction: One fourth of the population (approx) in the EU is affected by poverty. Poverty leads to socio-economic exclusion and also to bad (oral) health. Health inequalities are observed both within and between EU Member States.

Nearly 10 per cent of the active EU workforce is engaged in the labour intensive health sector. Workforce planning (WP) consists of putting the right number of people, with the right skills at the right place, right time, doing the right things for which they are suited in order to achieve the health goals of the country. EU-COM estimates a gap in supply of human resources in health by 2020 to be nearly 1 million health professionals. Thus WP influences health inequalities in terms of delivery of oral healthcare services, education and interdisciplinary working.

Challenges: The “Green Paper on the European Workforce for Health” of the EU-COM (2008) also identified demographic changes as a key challenge to the management of human resources for health across Europe apart from health worker mobility or migration, the prevention of a “brain drain”, the need of workforce data collection and the coordination of training and education.

Areas of action: In response to the challenges in WP the EU-COM and other international institutions have launched various initiatives in the past. These activities target the key dimensions of WP: monitoring, analysis and strategic planning. Before nearly 10 years the 60th World Health Assembly of WHO urges member states to scale up capacity to produce oral-health personnel, providing a fair distribution of these professionals to the primary-care level, and ensuring proper service back-up by dentists. In 2010 the EU-COM started an EU Joint Action (JA) that provided a platform for cooperation between countries on forecasting health workforce needs and health workforce planning in close cooperation with Eurostat, OECD and WHO.

Recommendations: Simply increasing the numbers of health workforce will not be enough.

Connect research and politics. *Create Health(y) Legislation:* Invest in healthy environments and oral health promotion and coordinate existing oral health strategies to reduce health inequalities.

Integrate WP for oral health as part of national plans for health. Coordinate needs-based WP with a pan-European approach and recruitment-strategies which prevent “brain drain”.

Education: Oral diseases are among the most common global public health problems. This highlights the importance of training the next generation of dental professionals to promote greater oral health equity. Current training programmes should be designed taking into consideration future health needs and objectives.

Interdisciplinary work and team approach: Inter- and intraprofessional collaboration is the main key for better health. Interdisciplinary working in the healthcare sector is essential to reduce health inequalities for the population. Dentistry is an essential part of primary healthcare, and dentists should be able to communicate with other healthcare providers as well as with relevant professions. Encourage cross-sector partnership to develop the roles of health and social care professionals.

“INEQUALITIES IN HEALTH: CHALLENGES AND OPPORTUNITIES IN EUROPE”

Dr. Zsuzsanna Jakab
WHO Regional Director for Europe

Today’s public health challenges are complex and link with living conditions and lifestyles of people. Our goal must be better health and well-being which is equitable and sustainable. It is clear that the disease burden affects populations unequally as a result of a complex interaction of socio-environmental determinants and the structure and function of health systems. The mechanisms are becoming better understood thanks to public health research.

Oral health is a vitally important part of general health. This Conference focuses on the oral disease burden in Europe, the well-documented inequalities in the way it is experienced by different population groups and the necessary responses by health systems and by public health intervention. Thus, solutions to tackling this significant component of NCDs are greatly welcome.

Overall we are doing well. Europeans continue to live longer and healthier lives than ever before; the differences in life expectancy and mortality between countries are diminishing; and premature mortality is decreasing. Meanwhile, oral diseases and related poor quality of life persist in Europe even in countries with advanced oral health care and high public expenditures for oral health.

Profound challenges remain in Europe. The absolute differences in oral health status between countries are substantial, and within-country inequities remain. Unfortunately, there remain political, structural and professional obstacles in eliminating or reducing the key social determinants of oral health and in implementation of effective preventive programmes.

We must absolutely rise to the challenge of unhealthy lifestyles. For example, if current rates of intake of sugars, tobacco use, and excessive alcohol consumption do not decline substantially our opportunities in preventing non-communicable diseases could be lost. This applies to oral health as well.

(Eliminate) We must truly “leave no-one behind”. Policies that influence the social determinants help explain the health inequities that we see and the new forms of health vulnerability which affect particularly those whose health is already lagging.

We must integrate and coordinate our responses to all of the determinants of health. Within the WHO European Region since 2012 we have established Health2020: a single health policy framework to guide our work. We have a variety of supporting strategies and action plans in place. The work carried out by our recently revitalised Oral Health Programme is consistent to the WHO Health2020 policy; this programme is part of the Division of Noncommunicable Diseases and Promoting Health through the Life-course. The concern for oral health is now incorporated into the “*Action Plan for the prevention and control of noncommunicable diseases in the WHO European Region*” which was just confirmed a few days ago by the Member States at the 2016 Meeting of the Regional Committee.

Today the United Nations 2030 Agenda for Sustainable Development, and the Sustainable Development Goals (SDGs), together with Health 2020, give us an opportunity to establish a coalition for health to ensure that “no-one is left behind” in pursuing health and well-being for all.

We need to secure good governance for health; policy coherence at regional, national and sub-national levels. and whole-of-government and whole-of-society efforts involving all stakeholders. National ownership, political commitment, the assessment of needs and robust planning combined with effective delivery are fundamental. The WHO document “*Oral Health Surveys – Basic Methods*” is most instrumental to the assessment of population needs, surveillance of oral health, and continuous evaluation and planning adequate delivery of services.

Promoting intersectoral work amongst diverse actors is one of the key challenges. This requires the strengthening of accountability for health across the whole of government and society, as well as the implementation of Health in All Policies (HiAP).

For oral health as for all health, we need strong and effective public health services to fight against health problems and to help us respond to needs. A focus on moving “upstream” towards health promotion and integrated disease prevention is most essential and we need people centred health services that work together.

11.30 – 12.15. Member’s presentations Saturday 1st October 2016.

3357. LESS CARIES (D3vcMFT) IN 12-YEAR-OLD CHILDREN’S WITH DOMESTIC WATER FLUORIDATION IN THE REPUBLIC-OF-IRELAND

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Aim: To determine the association between dentinal caries (D3vcMFT) and water fluoridation (0.6ppm at least) in 12-year-old children in the FACCT (Fluoride And Caring for Children’s Teeth) study, in counties Cork and Kerry, Republic-of-Ireland. The Clinical Research Ethics Committee of the Cork University Teaching Hospitals gave ethics approval.

Methods: A stratified cluster random sample of 12-year-old children individually categorised as having lifetime exposure to water fluoridation(‘Full-FI’) or no exposure to water fluoridation(‘Non-FI’) were clinically examined and D3vcMFT recorded. Parents/guardians provided demographic, socioeconomic, oral hygiene and dietary information including whether breastfed. Multivariate regression analyses (Poisson model, negative binomial model (NBRM)), and the Hurdle model (logit and zero-truncated negative binomial models) were used to analyse the relationship between D3vcMFT and water fluoridation, while controlling for age, gender, socio-economic status, behaviour variables including whether breastfed. Variables were considered significant at $p \leq 0.05$.

Results: In total 47% (n=469) of the 998, 12-year-old children examined and individually categorised as ‘Full-FI’ or ‘Non-FI’ had a D3vcMFT>0. In the NBRM, which was a better fit for the data than the Poisson model, categorised as ‘Full-FI’ rather than ‘Non-FI’ decreased the expected number of D3vcMFT by 32.0%, holding all other variables constant; brushing twice/day or more at 12-years-old and having been breastfed also decreased the expected number of D3vcMFT. Being economically disadvantaged increased the expected number of D3vcMFT by 43.5%, holding all other variables constant. In the first part of the Hurdle model, being in the Full-FI group decreased the odds of D3vcMFT>0 by 45.1%; having been breastfed decreased the odds of D3vcMFT>0 by 29.2%; being categorised as disadvantaged increased the odds of having decayed teeth by 49.2%, holding all other variables constant.

Conclusion: For 12-year- olds, exposure to domestic water fluoridation at a concentration of at least 0.6 ppm is associated with a lower number of teeth with dentinal caries and lower odds of having any dentinal caries compared with no exposure to domestic water fluoridation.

Acknowledgement of sources of funding: HRB;CARG 2012/34.

3415. SOCIAL GRADIENT IN CARIES EXPERIENCE AND ORAL HYGIENE BEHAVIOURS IN THE BELGIAN POPULATION

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This study aims to describe caries experience and oral hygiene of the Belgian population in relation to social parameters.

Methods: The data are derived from the Belgian “Oral Health Data Registration and Evaluation System (OHDRES) 2009”, collected between September 2009 and November 2010. A multi-stage, stratified cluster sampling technique was used to obtain a sample representative of the Belgian population aged 5 years and older. Data collection consisted of an Oral Health Interview (self-administered questionnaire, pre- tested and validated) and a standardized Oral Health Examination by a dentist during a home visit. ANOVA and multivariable regression analyses were used to reveal associations between social parameters and oral hygiene related parameters with oral health outcomes after correction for age and sex. School aged children, students and retired people were excluded for inferential analyses.

Results: 2742 subjects completed the questionnaire, a clinical oral examination was done for 2563 participants. 53% (N= 1,495) of the participants were female, mean age of 43 years. From the total population 11.1 % were caries-free. The mean DMFT was 10.8 (\pm 8.71). Employment status had a significant influence on untreated tooth decay ($p=0.05$) and edentulism ($p=0.02$) while untreated tooth decay was also influenced by frequency of tooth brushing and plaque index ($p<0.002$ and $p<0.001$ respectively). People having higher education versus lower or no education or having Belgian nationality versus non-Belgian nationality have lower DMFT-scores (both $p=0.003$).

Conclusions: Caries prevalence, expressed as mean DMFT and proportion of untreated tooth decay in Belgium are influenced by level of education and employment status respectively. Underprivileged groups have higher DMFT and more untreated dental decay.

Acknowledgement of sources of funding: this study was commissioned by the National Institute for Health and Disability Insurance. OHDRES is a joint initiative of the Universities of Leuven, Ghent and Brussels (KU Leuven, UCL, UGent, VUB and ULB).

3422. REPORTED HEALTH OF DENTISTS IN AN UNDER-SERVED AREA: A CASE-CONTROL STUDY

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Background: The uneven distribution of dentists in a geographical area creates disparities in access to dental care. Long distances and delays for appointments impact on patients' health. But what about the health of dental professionals?

Aim: The purpose of this study was to estimate the physical and psychological health of the dentists practicing in poorly served areas.

Methods: A case-control study was carried out comparing two French departments: Orne (under-served by dentists) and Morbihan (normal number of dentists). Questionnaires were distributed between June 1st and July 31st, 2015. The study population encompassed 95 dentists in the test group (Orne) and 204 in the control group (Morbihan). Statistical analysis was carried out with XLSTAT software. Type I error was set at 0.05. Results: The response rate was 57% (56) in the test population and 54% (101) in the control population. The age and gender profiles of the test and control populations were not significantly different (48.45 and 45.14 years; $p=0.061$ for age) and (58% men and 42% women; $p=0.125$ for gender). The age when they started working in their own dental office was higher in the test group (33 years vs 29 years; $p=0.040$). In the test group 41% practiced alone as opposed to 23% in the control group ($p=0.019$) and they employed more staff per dentist (1.14 vs 0.93; $p=0.027$). The number of days of activity per week, (4.02 days vs 4.04 days) and the number of hours of activity per day (8.94 hours) were similar. The test dentists (Orne) saw more patients a day (21.23 vs 17.97; $p=0.006$), the percentage of a two month wait for an appointment was above 40% (vs 17%; $p=0.002$) with a higher rate of missed appointments per week (3.87 vs 2.98; $p=0.030$) and a higher rate of emergency appointments with a seven day delay (9% vs 0%; $p=0.002$). In under-served areas dentists more frequently reported that they had routine work (34.7% vs 19.9% $p=0.025$). The test and control dentists considered themselves healthy but the test practitioners had more activity interruptions for professional reasons in the last years 6 (11%) vs 3 (3%), $p=0.046$, they were more likely to suffer from hearing disorders 13 (23%)

vs 9 (3%), $p=0.013$ and from being overweight 6 (11%) vs 3(3%), $p=0.046$. The prevalence of stress was not significantly different 26 (46.43%) vs 41(40.59%); $p=0.479$, but the test practitioners reported more suffering from overwork 9 (16%) vs 6 (6%), $p=0.039$, burn-out 5 (9%) vs 2 (2%), $p=0.043$ and suicidal thoughts 5 (9%) vs 1 (1%), $p=0.045$. Similarly, the test group had less sleep hours (7.16 hours vs 7.54 hours; $p=0.0022$), and were consuming more sleeping drugs (8.93% vs 0%; $p=0.002$).

Conclusion: The activity in under-served areas involves higher rates of work for the dentists and some reported impacts on their physical and psychological health. Fighting for adequate provision of dental care is an issue for the population's health but also for the health of dentists.

Session Presentation Abstracts

Session 1a Oral Epidemiology

3267. CARIES EXPERIENCE AMONG 15-YEARS OLD STUDENTS FROM STRUMICA CITY

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The aim of this study was to assess dental caries in 15-year-old students attending two regular public secondary schools in Strumica city.

Methods: In 2014, during this cross-sectional study, 545 secondary school students (born in 1997/98), from first grades were selected from 2 public secondary schools. The ethics committee of the Faculty of Dentistry at the University of St Cyril and Methodius approved the study and parental consent was obtained for each child. Dental status was evaluated using the 2013 World Health Organization caries diagnostic criteria for Decayed, Missing or Filled Teeth (DMFT) by 2 calibrated examiners. Data obtained during the survey were stored in a database and the R software environment for statistical computing was used ([http:// www.r-project.org/](http://www.r-project.org/)) and tested for possible statistically significant differences using the Kruskal-Wallis ANOVA test. A p value <0.05 was considered statistically significant. Participants dental status was evaluated using the 1997 World Health Organization caries diagnostic criteria for Decayed, Missing or Filled Teeth (DMFT) by 2 calibrated examiners.

Results: The total number of children in the sample was 545, comprising 206 (37.8%) females and 339 (62.2%) males. The mean DMFT was 3.36 (Standard Deviation = 2.99) and 95% confidence interval (CI) of 3.11-3.61. One- way analysis of variance (ANOVA) show p -value of 0.01560 ($p < 0.05$), which means that there was a statistically significant differences between mean DMFT scores for individuals who live in urban (3.81) and rural (3.12) areas. One- way analysis of variance (ANOVA) shows that there was a statistically significant differences between mean DMFT scores for males (3.04) and females (3.88). Significant caries (SiC) index was 6.69. The prevalence of caries-free children was 19.1%. The percentage of untreated caries or the ratio of DT/DMFT was 0.4386 (43.8%).

Conclusions: Dental caries experience was seen to be moderate among secondary school children from Strumica city and its surrounding. The DMF index data in adolescents from Strumica city show that dental caries is still a public health problem indicating that actions must be taken at national and local level.

3268. CARIES, MALOCCLUSION AND OHRQL IN CUZCO, PERU

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Aims: Caries and Malocclusion are considered public health problems due to high prevalence and their impact on quality of life. The overall goal of this study was to assess the prevalence of caries, malocclusion and their impact in the Oral Health Related Quality of Life (OHRQL) in a Peruvian population.

Methods: For this cross-sectional study, five calibrated trained orthodontists examined a sample of 301 adolescents (42% male and 58% female). Subjects were randomly selected from public schools in Cuzco, Peru to ensure that this was a representative sample. Interviews were conducted using the Child Oral Health Impact Profile (COHIP) to determine the impact of caries and malocclusion in OHRQL. A visual clinical examination was carried out using the index of decayed, missing and filled surface (DMFS). The need for orthodontic treatment was assessed using the index of complexity, outcome and need (ICON). The associations between measurements of caries, malocclusion, and the five conceptually distinct subscales of the COHIP index were examined. Statistical analysis was performed by means of STATA software program. The significance of differences for DMFS and ICON grades was assessed by means of chi-square tests ($p < 0.05$). Committee in Human research approval was obtained. Parents gave written consent before their children took part of this study.

Results: The age of the children ranged from 11 to 19. The mean DMFS was 7.6 with 64% of the subjects presenting with more than 5 caries lesions, 30% had pulpal involvement. More than 60% of the population was in need of orthodontic treatment, 48% of them were considered moderate to difficult to treat. We found a direct relationship between malocclusion and OHRQL ($p = 0.006$) and caries and OHRQL ($p = 0.001$).

Conclusion: The prevalence of caries and malocclusion in this population is high, affecting the quality of life of children and adolescents.

Methods of funding: MEX-US grant to Professor Orellana-Valvekens

3271. ORAL HEALTH INEQUALITY OF HEARING IMPAIRED CHILDREN IN IRAN

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The aim of this study was to assess the oral hygiene, dental caries and trauma status of 4-12 years old hearing impaired children in Iran.

Methods: In this cross-sectional study, all of the hearing impaired 4-6 years old children studying in the preschools under the supervision of the Welfare Organization and 6-12 years old children in schools under the supervision of the Education Organization were recruited. Informed consent was obtained from parents and the project got approval of the ethics committee in Isfahan University of Medical Sciences. Children were clinically examined by one examiner in their preschools and schools and Information about oral hygiene, dental caries and gingival status were recorded using gingival index (GI), oral hygiene index-simplified (OHI-s) and DMFT. Trauma status was also recorded in data reported forms. Descriptive and analytical statistics including, T-test (for comparing DMFT by gender and the two age groups), Chi squared (for comparing the frequency of trauma between the two age groups) and Mann-Whitney (for comparing the GI and OHI-s in two age groups) were used. Linear regression analysis was also used to determine the DMFT predictive factors and their effect size.

Results: 137 children including 43 (31.4%) aged 4-6 years, 94(68.6%) 6-12 years including were examined. The means of dmft and the total DMFT were 3.4 ± 4.1 and 3.8 ± 4.4 , respectively. 78(57.5%) had good oral hygiene; OHI-S. Only 15(10.9%) of children had normal gingiva using the GI index with a significant difference between the two age groups ($p = 0.012$). 40(29.2%) of all children had a history of head and neck trauma including 22(51.2%) in age group of 4-6 and 18(19.1%) in age group of 6-12 years ($p < 0.001$). Regression model revealed that the age of children (B-coefficient= -0.5, $p = 0.04$), their level of impairment (complete hearing loss/moderate hearing loss, B-coefficient= 3.4, $p < 0.001$) and the OHI-S (B-coefficient=1.2, $p = 0.03$) were significantly predictors of DMFT.

Conclusions: Dental caries status of the children in our study was above the state and province means in the age group of 4-12 years and also their gingival health status was poor. The oral health status and behaviors were improved in older children. Improvement of oral health status of this special group children should be considered more by policy makers. **Methods of funding:** We express our gratitude to the chancellery of research in dental school of Isfahan university of medical sciences and administrative support and also department of education and training of province for administrative cooperation

3278. DENTAL ANXIETY AMONG PUBLIC AND PRIVATE SCHOOLS CHILDREN IN ISTANBUL, TURKEY

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The aim of this pilot survey was to evaluate the reported prevalence of dental attendance, anxiety and associated factors among a sample of children in Istanbul, Turkey.

Method: The information was gathered through self-completion questionnaires distributed to children in the randomly selected secondary public and private schools from different socioeconomic areas. A total of 215 children (aged from 11-15 years) were randomly selected in a public school (n=134) and a private school (n=81) from different parts of Istanbul. For the purpose of this study, the list of secondary schools that included 6th, 7th and 8th grades was obtained from the Provincial National Education Directorate. All children (mean age (SD) 13.12 (0.86) years) completed the Modified Dental Anxiety Scale (MDAS) which also contained items related to dental attendance. The MDAS has been validated in Turkey (Tunc EP et al., 2005 and Ilguy D. Et al., 2005). Statistical analysis was performed using SPSS 21.0. The unpaired t-test was used to compare the groups. It was approved by the ethics committee of the Institute of Health Sciences of Marmara University (ethics number: 46). Consent was gained from the parents of the children.

Results: MDAS score was 10.7 (sd 4.63) of the total sample in the survey (11-15 years of age). MDAS score was higher in boys, but there were no statistically differences in MDAS scores between boys and girls ($p>0.05$). Private school children n=43 (53%) visited the dentist more regularly than public school children n=53 (40%) and this difference was statistically significant ($p<0.005$). However, the majority of children (public n=58 (43%), private n=18 (22%) attended the dentist only in an emergency. The main reason for irregular attendance was reported as "treatment not needed" (n=103, 48%).

Conclusions: Despite the advances in the availability of modern dentistry, a higher proportion of public school children reported irregular dental attendance and anxiety about certain of aspects dental treatment.

3279. CLINICAL CONSEQUENCES OF UNTREATED DENTAL CARIES IN CHILDREN

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Aim: Most dental caries in developing countries remains untreated especially in children. Only limited data are available on the clinical consequences of untreated dental caries because there is no measure to quantify the prevalence and severity of oral conditions resulting from untreated dental caries. Recently, the PUFA index has been used to display the severity of oral health neglect. Therefore, the aim of this cross-sectional study was to assess the odontogenic infections in primary teeth of 4- and 12-year-old children.

Methods: Data from oral examinations provided from the Marmara University, Dental School during the months of December 2015 - January 2016. A total of 124 children aged 4-12 were included in this cross-sectional epidemiological study. This study was performed with ethical approval by the ethics committee of the Marmara University (registration number 22.02.2016-24). The clinical consequences of untreated primary molar were recorded by using the PUFA index. The PUFA index per child represents the number of teeth meeting the following diagnostic criteria: Decayed teeth with visible pulpal involvement (P/p) was recorded when the open pulp chamber was visible or the clinical crown was destroyed and only root fragments were left. Ulceration (U/u) of the soft tissue surrounding the tooth was scored when caused by dislocated tooth fragments. Fistula (F/f) was diagnosed when a pus-releasing sinus tract

was related to the tooth with pulpal involvement. Abscess (A/a) was scored when a pus-containing swelling was related to the tooth. The diagnosis of the PUFA index was performed visually, without the use of a dental probe. **Results:** 122 (58 boys and 66 girls) children 4-12 year-olds were examined, a 98% response rate. Mean age was 7.6 ± 3.2 . The mean PUFA was 1.10 ± 1.49 . The prevalence of PUFA was 19 (15%) and exclusively concentrated on pulpal involvement (p) with a mean PUFA of 0.1 ± 0.5 . Pulpal involvement (p) was scored most frequently 118 (95%). Virtually all PUFA scores were concentrated on primary molars with pulp involvement. Boys had a higher PUFA (1.26 ± 1.69) than girls (0.97 ± 1.29) and mean PUFA score was higher in the population under 6-year-olds.

Conclusion: The PUFA index highlights relevant information by assessing the severity of untreated dental caries. This data might be used by dentists and decision makers to promote oral health care programs for children at high caries risk.

3281. ORAL HEALTH KNOWLEDGE AMONG PARENTS OF CHILDREN ATTENDING THE DENTAL SCHOOL, ISTANBUL

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The aim of this study was to assess the level of knowledge about oral hygiene of childrens parents attending the department of pediatric dentistry in the Dental School, Marmara University.

Method: A descriptive study was conducted from November 2015 to February 2016 among fifty parents of children visiting the department of pediatrics dentistry. Fifty parents of children aged 4-14 years, were invited to participate in the study. A 34-item questionnaire covering socio-demographic characteristics, dietary practices, oral hygiene practices, about deciduous teeth, was distributed to parents, during their visit. Data were presented in terms of numbers and percentages. This Project was approved by the Ethical Committee of Marmara University Institute of Health Science. Each participant signed informed consent.

Results: Parents mean age was 36.5 (5.3) years; the mean age children was 9.3 (2.7) years. The majority of the study population belonged to the 25-42 year old age group (90%). Of the participating individuals 34 (68%) were females and 19 (38%) of the parents were educated to elementary school level. Self-perceptions of their own dental health showed 31 (62%) felt teeth were very important to them. However 12 (24%) of the subjects visited a dentist only when in pain. Only one parent had taken her child for just a check-up. In the present study 42 (84%) agreed the deciduous caries should be treated. Participants were aware of the risk posed by snacking to the dental health of children. A total of 36 (72%) gave no emphasis to toothbrushing for preventing cavities.

Conclusion: There was no association of parental age, or education, with preventive dental knowledge. There is a need to improve parental knowledge regarding childrens dental health. Promoting oral health care as part of general health is an important goal for education.

3287. DENTAL CARIES EVALUATION USING ICDAS FOR CHILDREN FROM A DEPRIVED ROMANIAN REGION

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The aim of the study was to evaluate dental caries in children aged 7-10 coming from deprived area in Romania using the ICDAS criteria.

Methods: 485 children from the South- East region of Romania were selected from all primary schools according to the geographical area (county) and the size of the school (small, average, and large). Ethical approval was obtained from the Ethical Committee of the University of Medicine and Pharmacy Timisoara, Romania and the written informed consent forms were signed by the parent/carer. All the examinations were conducted in standard dental chairs by two trained and calibrated examiners. Before the study, a 90 minutes e-learning program of the ICDAS system was sent to the examiners and calibration sessions were arranged at the examination site before starting the study. ICDAS caries codes 1, 2, and 3 were

counted together as a measure of enamel caries (D1–3) and 4, 5, and 6 as dentine caries (D4–6). The data was analysed by IBMSPSS Statistics 20.0. The association between first permanent and the second primary molars was analysed by Spearman correlation coefficient (r) and the mean caries indices according to the age by Kruskal-Wallis test.

Results: The inter- and intra- examiner correlation was high, all the weighted kappa values being >0.9 . Altogether 450 children (92.7%) participated in the clinical examinations, 45.5% ($n=205$) boys and 54.4% ($n=245$) girls. The mean age was 8.8 years (0.38). There was a clear prevalence of lower ICDAS scores (1-3) for permanent molars and higher ICDAS scores (4-6) for temporary molars. The most prevalent score was 2 on the occlusal surfaces of permanent upper and lower molars. The highest ICDAS scores (4-6) were recorded on the occlusal surfaces of lower temporary molars. All the mean caries indices were not statistically different according to age. However, the mean number of dentine caries ($d/D4-6T$, $d/D4-6S$) seemed to decrease according to the increasing age. When analysing the association of the distributions of ICDAS codes on the different surfaces of the first permanent and second primary molars, the strongest correlations were on the occlusal surfaces of the maxillary and mandibular molars and on the lingual surfaces of the mandibular molars.

Conclusion: A high prevalence of dental caries in both primary and permanent teeth was found. It can be concluded that the ICDAS method gives relevant information about caries status for children coming from a deprived community in Romania.

Acknowledgement of the County School Inspectorate Gorj for supporting the study

3297. THE PREVENTION OF EARLY CHILDHOOD CARIES IN KOSOVO PRESCHOOL CHILDREN

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Aim: To test effectiveness over 2 years of Fluor protector S (7700 ppm fluoride) in the prevention of Early childhood caries (ECC) in Kosovo preschool children.

Method: 500 children aged 18-48 months were randomly selected at ten kindergartens in the capital Prishtina. The subjects were randomly divided into equal test and control groups. Fluor protector, was applied in the test group 4 times a year, over two years. The control group was examined similarly to the test group, plus advice given for daily oral hygiene. Exclusion criteria were: uncooperative children, children with special needs, etc. Dental status was recorded based on International caries Detection and Assessment System (ICDAS) index. Examinations were carried out by one profesor, three specialist and a PhD candidate in from preventive dentistry. Diagnostic criteria was calibrated with inter- examiner reliability of kappa = 0.90 based on the examination of 25 children. Statistical tests included T-test or analysis of the variance (One Way ANOVA). This study was approved by the Ethical Board of the Medical Faculty of Kosova. All participants parents gave informed consent.

Results: The mean dmfs at base line in the test group was 1.4 teeth in the control group, 0.9 teeth. At the end of 2 years the mean dmfs for the test group was 5.3, and for the control group it was 10. The fluoride varnish had significantly reduced caries by 50%, compared with the control group. At the end of the study, there were 151 (69%) caries free children in the test group and 88 (42%) in the control group, with a significant difference between groups ($p<0.001$).

Conclusions: Early childhood caries with very high prevalence remains a serious medical and social problem, especially in countries where there is no national program of oral health, such as in Kosovo. Application of Fluor protector S, 4 times a year is effective in caries reduction. Fluor protector S application to newly erupted teeth accompanied by education and dietary measures may reduce the high prevalence of ECC.

3299. ASSESSMENT OF A PROGRAMME FOR PROMOTING CARIES-FREE CHILDREN

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This study aims to test the efficacy of an oral health promotion programme starting from pregnancy in increasing the mother's self-efficacy to maintain their children's oral health.

Methods: In this nonrandomised-controlled study the self-efficacy and behaviour of the intervention group was compared with a control group after two intervention phases of the program. The intervention group consisted of expectant mothers living in a low socioeconomic area of Izmir-Turkey. All women who were pregnant between April- June of 2013 (N=289) were invited to take part and the participation rate was 85.8% (N=248). The second phase was performed in 2014 when the babies were 6-9 months with a participation rate of 69.4%. Both phases were in culture centres located in the area where oral health of mothers were examined, tooth brushing instruction and interactive group education was given. 68.6% (n=118) of mothers who attended the first two phases came to third phase when the babies were 18-24 months old in 2015 and completed a questionnaire before the educational activities. The mothers of children of the same age (N=189), from a similar socioeconomic status, living in another part of the city with a participation rate of 59.8% were the control group (N=113). The percentages of the answers given by the groups were compared using Chi-square test. Ethical approval was obtained from Ege University Ethics Committee (No:13-2.1/18) and signed consents were taken.

Results: There was no difference on education levels, years spend in Izmir, social and healthcare insurance between two groups. There was a statistically significant difference ($p<0.05$) among groups on percentage of participants whose mother tongue was not Turkish (control N=59, 52.2%; intervention N=41, 34.7%). 83 (70.3%) of the mothers in the intervention and 37 (32.7%) in the control group believed that they could prevent their children's teeth from developing caries ($p<0.05$). The percentage of mothers who reported that they could clean their children's teeth before going to bed everynight was significantly higher in the intervention group (intervention N=90, 76.3%; control N=62, 54.9%) ($p<0.05$) but the difference was lost due to children's resistance to performing the task. Similarly the significant difference on not giving any other drink than water during sleep (N=77, 65.3%) and avoid giving sugary snacks (N=87, 74.4%) in the intervention group disappeared with children's persistent crying or interference of the husband/mother-in-law. In the intervention group, 38 mothers (32.2%) reported that they didn't give any sugary snacks, 51 mothers (43.2%) never fed their children during sleep and 31 mothers (26.3%) cleaned their children's teeth during last week. The results in the control group were 22 (24.8%), 65 (57.5%) and 10 (8.8%) respectively ($p<0.05$).

Conclusions: The intervention study improved the self-efficacy of mothers on their children's oral health but showed that there was a greater need to support them against obstacles.

Acknowledgements: The study has been supported by municipalities of Bornova and Konak.

3300. THE INFLUENCE OF INTRINSIC FACTORS ON EROSIVE TOOTH WEAR IN A COHORT STUDY

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The interplay of causative and protective factors on the erosive tooth wear process is complex and little is known about the long-term effects. The aim of the present study was to assess the long-term influence of self-reported intrinsic factors (gastroesophageal reflux disease (GERD), alcohol abuse, heavy use of alcohol, multiple pregnancies and eating disorders) on erosive tooth wear in adults. Saliva secretion and bruxism were also taken into account.

Methods: Of the total Northern Finland Birth Cohort 1966, those living in or within 100km of the city of Oulu (n=3,181) were invited for a dental examination. Of them, 1,962 (61.6%) participated, comprising the final study group. A standardized clinical dental examination was conducted in Oulu between

4/2012-6/2013 by seven calibrated dentists. Erosive tooth wear was assessed using the Basic Erosive Wear Examination Index (BEWE, 0–18). Clinical data was supplemented by postal questionnaires conducted in 1997/1998 and 2012/2013 and hospital registers. The participants were divided into severe (BEWE sum \geq 9) and no to moderate (BEWE sum=0-8) erosive wear groups, and logistic regression models were applied. The Ethical Committee of the Northern Ostrobothnia Hospital District approved the study.

Results: Selected intrinsic factors were quite rare and explained only 5.9% of the difference in the prevalence and severity of erosive wear. Daily symptoms of GERD (OR3.8, CI 1.2-12.0) and hyposalivation (OR3.8, CI 1.2-11.8) were the strongest risk indicators for severe erosive wear. Additionally, variables associated with elevated risk for severe erosive wear were diagnosed alcoholism at any point (OR2.5, CI 0.7-9.7) and self-reported heavy use of alcohol in both questionnaires (OR2.0, CI 0.6-6.2). Even low-dose long-term consumption of alcohol was associated with erosive wear.

Conclusions: In this cohort sample, intrinsic factors such as GERD or alcoholism alone are relatively uncommon causes of erosive wear. The role of long-term use of alcohol in erosion may be bigger than presumed.

Methods of funding: Supported by grants from The Finnish Dental Association Apollonia, University of Oulu and Finnish Female Dentists.

Session 2a

Oral Health Promotion

3270. CARIES PREVENTIVE EFFECT OF PROFLUORID ON FIRST PERMANENT MOLARS

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The purpose of this research was to study the effectiveness of Profluorid varnish in preventing caries in permanent teeth in primary school children.

Methods: Nine-year-old children attending two schools in one district of Minsk, Belarus were randomized to the intervention group (fluoride varnish application after supervised tooth brushing) and the control group (supervised tooth brushing 2 times a year). Children in the intervention group (n=37) had Profluorid varnish (5% NaF) applications. Children from the control group (n=38) had the same series of contacts. Regional ethical approval, the Head teacher and parental agreement were obtained. The dental examination was performed using a dental chair at school. Interventions were undertaken by one dentist at six-monthly intervals during one year. DMFS index was recording by another dentist who was blind to the study groups. The dental caries increment was calculated by comparing baseline and follow-up data. Data was statistically analysed using the chi-square test, p value <0.05 was considered statistically significant.

Results: The mean age of children was 9.0 \pm 0.3 years. Each child had on average 12.2 \pm 0.1 permanent teeth. The mean DMFS was 1.07 in the intervention group and 1.26 in the control group (p>0.05). Carious lesions were diagnosed exclusively on the first permanent molars. The number of permanent teeth increased to 16.1 in the intervention group and to 17.6 in the control group after 1 year. The mean DMFS index was 1.41 in the intervention group and 1.87 in the control group. The differences were statistically significant ($\chi^2 = 4.9$; p<0.05). The DMFS increment was significantly lower in the intervention group compared to the control group by an average of 0.27 surfaces per child, a prevented fraction of 44.4%.

Conclusions: The study results confirm the caries preventive effectiveness of Profluorid varnish on first permanent molars.

Methods of funding: BSMU

3274. IMPACT OF AN INTERACTIVE EDUCATION LESSON ON ORAL HEALTH BEHAVIOR AMONG TEENAGERS

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The evaluation of changes to oral health behaviors of an interactive, age-adapted oral health education lesson in teenagers.

Methods: The study was conducted in Bucharest, during May-November 2015 on the experimental group of subjects included in the oral health education Erasmus + “Com4You” project. The ethical approval from the University and the consent from the schools and parents were obtained. The sample group included 63 subjects, with mean age of 14.3 years (± 1.6), 19 (30.2%) boys and 44 (69.8%) girls, enrolled in two schools in Bucharest. Their oral health behavior was assessed at the beginning of the study and after the first oral health lesson. The lesson took place in the schools, offered by dental students and teaching staff from Faculty of Dentistry, in small groups, lasting 45-50 minutes, presenting information about oral hygiene, using experiential education. This lesson was the first from a series of 3, the topics of the next two were: diet, and regular dental visits. Oral health behavior was assessed using a self-administered questionnaire, with 37 open and closed items. The initial group included 76 subjects, 13 dropped out and the final group was formed of 63 subjects. The response rate was 100%. The data was analyzed using SPSS v.19.

Results: Regarding oral hygiene behavior, statistically significant differences were found in terms of frequency of subjects using proper brushing technique: 9 (14.3%) before and 28 (44.4%) after the lesson, $z=3.7$, $p=0.00$; frequency of subjects using mouth wash: 33 (52.4%) before and 50 (79.4%) after, $z=3.5$, $p=0.00$ and the frequency of mouth rinsing per week: 3.3 ± 3.9 before and 4.5 ± 3.2 after, t test, $p=0.03$. Two thirds of the subjects brushed at least twice daily before the lesson: 45 (71.4%) and their number increased to 47 (74.6%), statistically insignificant ($z=1.3$, $p=0.18$).

Regarding diet-related behavior, there were registered no improvements (frequency consumption of fruits: $p=0.42$, citrus fruits: $p=0.19$, sweetened drinks: $p=1.78$, sugar-free drinks: $p=0.24$) or worsening (consumption frequency of pastries: $p=0.00$, chocolate: $p=0.02$, beverages: $p=0.03$). For dental services – related behavior were found statistically insignificant improvements of frequencies: $z = 0.93$, $p=0.35$.

Conclusions: Oral health behavior was improved by the lesson offered but only regarding hygiene, which was the topic of the first lesson. There is a necessity of emphasis on raising awareness about the importance of diet and regular dental check-ups.

Methods of funding: The Erasmus+ project Youth Community-based Oral Health Learning Model was funded by The European Union.

3286. DIFFERENT TOOTHPASTES EFFECT ON THE WHOLE SALIVA IN SITU

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The aim of this study was to identify a possible effect of fluoride and non-fluoride toothpaste on the crystallisation properties of whole saliva.

Methods: Several drops of saliva, collected from a patient, were placed on a glass and after drying in air were studied under a microscope. Two type of saliva crystallizes were assigned: I = centripetal and II – diffused (P. Leous, 1977). Forty medical students (60% females) aged 20- 25 years (mean 21.6) participated in this pilot study after giving consent and with approval of the Medical University Ethical Board. After general and oral health assessments, patients were divided into two study groups of 20 subjects. The “A” group did one month home toothbrushing with fluoridated (1450 ppm F-), and the “B” group with fluoride free toothpaste. Both toothpastes were commercially available. The saliva tests were performed 4 times: at baseline, after 1, 2 weeks and 1 month. Pearson Chi-square test for statistical analysis was used, set at $p<0.05$.

Results: Oral health data in “A” group: DMFT 6.8 ± 0.99 ; OHI-S 0.75 ± 0.08 ; GI 0.41 ± 0.06 ; resting saliva secretion 0.22 ± 0.02 ml/min; in “B” group DMFT 6.9 ± 0.9 ; OHI-S 0.84 ± 0.09 ; GI 0.32 ± 0.05 ; resting saliva secretion 0.28 ± 0.03 . Differences between groups were not significant ($p>0.05$). In group “A” the type I saliva crystal was observed in 13 ($65\pm 10.7\%$) subjects initially, then it has increased to 17 ($85\pm 8.0\%$) of subjects in all three follow up tests ($p<0.05$); the type II has decreased from baseline of 7 ($35\pm 10.7\%$) to 3 ($15\pm 7.9\%$) subjects at the end of the project ($p<0.05$). In group “B” the number of subjects with the type I has reduced from 16 ($80\pm 8.9\%$) to 13 ($65\pm 10.7\%$) ($p<0.05$); the type II has increased from 4 ($20\pm 8.9\%$) to 7 ($35\pm 10.7\%$) subjects ($p<0.05$).

Conclusion: Toothbrushing with fluoridated toothpaste promoted an increase in the centripetal type of saliva crystals, while fluoride free toothpaste has shown a reduction in centripetal saliva crystals.

Acknowledgement of sources of funding: Belorussian State Medical University.

3293. DEVELOPING ORAL HYGIENE SKILLS IN VISUALLY IMPAIRED CHILDREN IN ROMANIA

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Aim: The purpose of this study was to improve oral hygiene, to prevent dental cavities and periodontal disease in visually impaired children.

Methods: With project partners: University of Medicine and Pharmacy “Victor Babes” - Faculty of Dental Medicine; Timis County Council and “IRIS” High School, Timisoara. Ethics approval was given by The University of Medicine and Pharmacy „Victor Babes” ethics committee and informed consent was provided by the School. For the development of this project we received the support of Timis County School Inspectorate. From the children enrolled at IRIS School (aged 6 to 18 years), 20 children were totally blind and 83 children had moderate visual impairment, some with varying degrees of mental disabilities. The programme started with the dental team of the Faculty going to the high school, where, dental education lessons were held by age groups and interactive discussion took place with children. Secondly, during the baseline evaluation, the target group traveled by minibus, under the supervision of teachers, to the headquarters of Preventive Dentistry, Community and Oral Health Discipline. There, the baseline Silness and Loe plaque index was recorded (using Miraton disclosing solution) and the children received practical demonstrations of correct toothbrushing and preventive treatment. According to need care included scaling,

professional cleaning, fissure sealing and topical fluoride applications, accompanied by explanations and discussions designed to educate and motivate patients. After 6 months a second Silness and Loe plaque index record was taken, along with further training of the children.

Results: At baseline, 14 (70% of the total) completely blind children and 34 (40.9%) children with a partial visual defect took part. The second Silness and Loe recording saw 9 (64.2% of those at baseline) totally blind children and 28 (82.3% baseline) children with partial visual deficit. The plaque index decreased from an average of 2.4 in those blind to an average of 1.8 and from an average of 2.5 in those with visual defects to an average of 1.8. However, this is still higher than in non-impaired Romanian children (1.2).

Conclusions: Total or partial visual impairment is linked to poorer dental hygiene in Romanian children. Through education lessons and through practical sustained repetitive education, oral hygiene can be improved by the joint efforts of relatives, educators and dentists.

Methods of funding: We thank the Lions Diamond Club from Timisoara for material support in acquiring toothbrushes and toothpaste used in this project.

3294. QUESTIONNAIRE DEVELOPMENT OF ATTITUDES TOWARDS ORAL SELF-CARE IN IRANIAN ADOLESCENTS

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This study aimed to develop a new questionnaire on “attitudes toward oral self-care” in Iranian adolescents.

Method: A primary version of the questionnaire was reviewed by an expert panel (8 specialists) in order to determine the content validity index. The face validity was then evaluated in a sample of 20 schoolchildren. According to sample size calculation with 95% α and power 80%, the final version was tested on 200 subjects aged from 13-18 years, by non-randomised purposeful sampling based on the region of residency (social status). Ethical approval from the ethics committee of Isfahan University of Medical Sciences 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.

Results: The final version of the questionnaire contained 40 questions and had a corrected Cronbach's Alpha of 0.7. There was a 98% response rate, the cases (mean age 15.9) had a mean attitude score of 104 ± 15 . The correlation between attitude score and social status was statistically significant ($p=0.03$). Using exploratory factor analysis the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.7 and the Bartlett's test was significant. Five factors accounted for about 38% of the total variance. The suggested model consisted of subdomains like values (appearance, function), affects (positive, negative, neutral, threatening life), parent's effect, social impact and knowledge of caries, and was acceptable after applying confirmatory factor analysis, with a moderate goodness of fit.

Conclusions: The “attitudes toward oral self-care” questionnaire used with Iranian adolescents in this study is reliable and valid in content and construct.

3305. EFFECT OF INTENSIFIED PREVENTION ON DENTAL HEALTH OF CHILDREN DEPENDING ON SES

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This study aimed to ascertain whether the dental health of primary school children can be improved by introducing a group prevention program based on applications of fluoride gel and supervised tooth-brushing, following intensive preventive care in kindergarten.

Method: Twenty schools in Northern Hesse, Germany were chosen by lot to be included in the intensified prevention based on tooth-brushing with fluoride gel (fluoride content 12,500 ppm) under supervision of a dental assistant at intervals of three weeks during school session (test group). Pupils in 23 other primary schools (control) received instruction on tooth brushing three to four times a year from specially trained dental assistants and were given free toothpaste for home use (basic prevention). The test and control subjects (total $n=1079$) were further classed into three groups based on the preventive care received in kindergarten (intensive prevention, basic prevention or no organised prevention in kindergarten). The study was approved by the Ethics Committee of the Faculty of Medicine, University of Marburg and written consent was obtained from parents. The study was performed from September

2010 to June 2012. Caries experience and increment from second grade (7-year-olds) to fourth grade (9-year-olds) were recorded by one trained and calibrated examiner (A.L.). A standardised questionnaire was used to record independent variables. Socioeconomic status (SES) was collected through parents schooling, occupational training and occupational status. To compare the caries scores of subgroups, non-parametric tests were used.

Results: While second-graders without professionally supported daily tooth-brushing in kindergarten exhibited an average $d3-6mft$ of 2.17, in those who had enjoyed intensive dental prevention the value was 19% lower, ($d3-6mft=1.74$). The caries increment was significantly lower mainly among children who had received the maximum of group prevention (intensive prevention in kindergarten and gel program at school) compared to the group with basic prevention in kindergarten and no fluoride gel at school ($p=0.039$). A significant difference was found in the mean DMFT depending on socioeconomic status (no prevention in kindergarten, fluoride gel at school with low SES $DMFT=0.47$ vs. with high SES $DMFT=0.18$; $p=0.023$). Class-specific differences were no longer visible among children who had taken part in a basic preventive program.

Conclusions: The results show that intensified preventive programs in kindergartens and schools, based mainly on supervised tooth brushing, have a positive effect on the dental health of primary school children.

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3309. THE IMPACT OF SCHOOL-BASED PROGRAMMES ON CHILD KNOWLEDGE

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A survey was conducted from April to May 2015, in private and public primary schools of Montpellier to compare pupils knowledge about oral hygiene, with and without school-based educational programmes. The aim of this study was to test the efficiency of such prevention programmes.

Methods: Two schools were randomly selected from the 5th and 6th years (49.5% of 5th year and 50.5% of 6th year). A total of 204 children (90 from public and 114 from private schools) participated in this study: 55% boys, 45% girls. They were randomly divided in two groups (test and control). A first questionnaire (A) was distributed to all the children to evaluate their knowledge at baseline. Then a first intervention programme was implemented in the test group. The same intervention was repeated 1 month later. Then all the children, from the test and control groups, were asked again to fill in the same questionnaire (A). The primary endpoint was a score (from 0 to 14), corresponding to the number of correct answers.

Results: The mean age was 10.4 in the control group and 10.2 in the test group with no significant difference ($p=0.24$). In the test group, the scores were significantly increased after the intervention programme. In the control group, the difference was not significant. ANOVA showed that gender was not significant ($p=0.38$), but the type of school was significant ($p=0.002$): the scores were greater in private schools ($p<0.0001$).

Conclusion: This primary school survey confirms the impact of school-based programmes on childrens knowledge of oral prevention. Moreover, such preventive programmes could ideally become part of the school curriculum.

3311. GAIN AND LOSS FRAMED ORAL HEALTH PROGRAM EFFECTIVENESS IN CHILDHOOD

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Prevention of diseases and provision of a satisfactory quality of life for the population should be a primary aim of all societies. Knowledge, attitude and beliefs have been considered important factors in oral health care. Oral health behaviours such as brushing, flossing, regular dental visits and receiving the primary preventive measures are necessary to avoid caries and periodontitis. School based oral health education has been found effective in improving oral health knowledge. Health messages can be framed in positive (gain- framed) and in negative (loss-frame) methods. How information is presented can influence oral health behaviours.

Aim: To compare these two oral health education methods in elementary school children.

Methods: Between September and December 2015, all 205 children aged from 6- 12 years from the only junior school in a small town near Debrecen and their parents were invited to take part in this study. Data regarding socio- economic status, educational level, oral health knowledge, attitude and regular dental care were collected by questionnaire from children and from parents before an oral examination.

Children were randomly divided into two groups, and oral health education was given in one of the two the baseline assessment of DMF-T and plaque index. Two months later the effectiveness of the oral health education program was assessed when the plaque index was taken and a questionnaire was completed by the children. Ethics approval was given by the Ethics Committee of Debrecen University and the parents of all children who participated gave their consent.

Results: Of those invited questionnaires were completed in full and clinical examinations performed on 160 children, of whom 83 were female and 77 male (mean age 9 years, $SD \pm 1.94$). The average DMF-T was 5.44 with $D=5.27$, $M=0.02$, $F=0.15$ components. The baseline plaque index was 46.4% (± 22.4). After two months, the mean plaque index was reduced 10.3% (± 14.6), there was no statistical difference between the two oral health education groups. There was a significant association between parental education level and their children's plaque index decrease ($p > 0.0001$). The highest reduction in plaque level was found in children whose parents had a high educational level and the least in those whose parents had a low educational level.

Conclusion: In the case of children whose parents had a low level of education, the school based oral health education programs was not effective. In their case parental education and individual motivation or peer learning in small groups may be more beneficial.

3312. ORAL HABITS, DENTAL ABNORMALITIES AND SPEECH DISORDERS IN THE PRIMARY DENTITION

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Previous studies have shown a strong correlation between orthodontic and speech disorders. Childhood oral habits may significantly influence the development and maintenance of these anomalies. As no Hungarian data has yet been published on the subject, our aim was to analyse the relationship between malocclusion, oral habits and associated speech disorders in the primary dentition.

Methods: The study group consisted of 271 children aged 4-7 who were recruited in connection with their annual kindergarten dental examination in the city of Debrecen. Parents were informed about the purpose and progress of the research. The study protocol was approved by the Committee of Ethics in Clinical Research of the University of Debrecen. The clinical examination consisted of dental and orthodontic screening according to WHO and the Angle orthodontic diagnostic system. Local orthodontic anomalies were also recorded. A speech therapist recorded articulation disturbances and oral parafunctional habits. Data presentation and statistical analysis were performed with SPSS statistical package. Chi-square test was used to analyse the qualitative data, correlations were evaluated by Pearson Correlation and Cluster Combine analysis. The level of significance was 0.05.

Results: An orthodontic anomaly was found in 11.8% ($n = 32$) of the children. The speech therapist found articulation disorders in more than one third of the cases (36.2%, $n = 98$) and 119 children (43.9%) were found to have existing parafunctions. Parafunction associated articulation disorders were significantly more common ($p = 0.005$) than articulation problems alone.

Conclusion: The frequent occurrence of parafunction and orthodontic disorders associated with speech disorders emphasize the importance of regular and complex (dental, orthodontic and speech) screening. Early diagnosis may help with effective treatment.

3316. INITIAL PHASE EXPLORING BARRIERS TO ORAL HEALTH AMONG YOUNG CARERS IN SURREY, ENGLAND

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Young carers; those under 18 years, caring for someone with a condition or disability, are a hard to reach and vulnerable group in society. They provide valuable care that can sometimes compromise their own wellbeing, including their dental care.

Aims: This pilot study aimed to explore the barriers young carers face with their oral health. Before structured focus groups could be arranged, themes around inequity issues to accessing care, barriers to good oral health and experiences of oral care needed to be explored. Within Surrey, an area in the South East of England, 6% of primary and secondary school children identify as young carers.

Method: A member of the Surrey County Council public health team who was a general dental practitioner attended a young carers forum. The session was part of an activities and social evening, informal in nature. Pictures were used to highlight key topics, and discussion was informal and interactive. Topics included self-care, oral care for a relative, accessing a dentist and emergency dental care. At the end of the session young carers were asked about personal dental access and the person they care for, emergency care and dental anxiety.

Results: Eight carers attended aged between 8-10 years. Five children regularly attended a dentist with their families, while the rest of the group did not have a dentist or had only ever attended once. The main barriers around access were travel, dental anxiety and looking after relatives with disabilities. Most of the children had heard of NHS 111 (telephone helpline) but were not aware it could be used for advice on dental emergencies. Five children knew to call the dentist or tell a family/friend if they were in pain. All participants found the session engaging and useful.

Conclusion: Although the sample was small, the session highlighted the need for further research into barriers to care faced by young carers. This group is unique as they not only have to be aware of their own oral health needs, but that of the relative for whom they care. Oral health interventions need to target both hard to reach groups and should aim to improve equity in access to services. Oral health information has now been placed on a national young careers website.

Session 3a

Oral Health Services Research

3275. USE OF PUBLIC EMERGENCY DENTAL SERVICES BY CHILDREN IN TIRGU-MURES, ROMANIA

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In Romania, dental health services are provided mainly through user pays private practices and there is limited reimbursement of dental services for children from the government. The economic recession lead to substantial lack of insurance coverage for oral health care of low-income populations.

Aim: The aim of the study was to assess the impact of changes in the reimbursement of dental services on the demand for publicly funded emergency dental care for children provided by the Mures County Emergency Hospital, in the Mobile Emergency Service for Resuscitation and Extrication (MESRE), in Tirgu-Mures, Romania.

Methods: This four-year retrospective study was based on the analysis of patient's dental records. Included in the study were all patients requesting emergency dental care at MESRE Dental Office in Tirgu-Mures since its establishment in 1st of February 2012. 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 study period a total of 26949 patients were treated in the emergency dental office and the proportion of children (aged 0-18- years) was 5169 (19.2%). Compared to the first year of the service, the proportion of emergency dental care visits was significantly higher in all other years, particularly in the period when dental care for children was not reimbursed by the public system ($p < 0.05$). However, the highest rate of emergency dental visits was observed in the last year 1524 (22.2%).

Conclusions: The results highlighted that dental services for children were influenced by changing state insurance schemes. The high demand for emergency dental care reflects the need for community based public dental care in Tirgu-Mures, Romania.

3276. ORAL HEALTH DELIVERY IN URBAN AND RURAL PRIMARY HEALTH CENTERS, BANGALORE, INDIA

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The study had multiple aims; 1) To assess infrastructure availability at primary health care centers for the management of patients with dental and maxillofacial complaints. 2) To assess reasons for the first point of contact for patients at primary health care centers with dental and maxillofacial complaints. 3) To assess the perception of medical officers at primary health care centers on oral and maxillofacial related treatment seeking behavior of patients visiting the center. **Method:** The structured questionnaire was subject to content validation (C.H.Lawshe-1975) and then the questionnaire was adopted, the details of primary health centers in Bangalore Urban District as well as Bangalore Rural District were collected from the District Health Officer and all the centers were visited by the investigators, The Informed Consent and response for self administered questionnaire was obtained from the medical officers. The Ethical clearance for the study was obtained from Institutional Review Board of The Oxford Dental College, Bangalore before commencing the study.

Results: Data was collected from all the seventy six (65 responded) primary health centers in Bangalore urban district and forty eight centers (30 responded) in the Bangalore rural district, about 65(61.7%) of the centers (urban and rural together) do not have a separate dental unit, 85(89.2%) of the medical/dental officers responded that patients repeatedly seek symptomatic relief for dental and maxillofacial complaints, 73.8% of the centers do not maintain separate dental outpatient registers.

Conclusion: There is a need for integrating delivery of oral health care through primary health centers as 78.4% of primary health centers lacked sufficient infrastructure (separate dental unit, dental staff, outpatient registers) to cater the oral health needs of these patients, which are currently providing only symptomatic relief.

3277. DENTISTS RELIABILITY SCORING THE PLAQUE INDEX USING A FLUORESCENT COLOURING AGENT

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Aim: Plaque level is one of the risk factors for assessing individual caries risk. While disclosing agents are effective for the detection of dental plaque, patients do not like having their teeth and soft tissue dyed. Fluorescein is an alternative plaque detection agent which fluoresces yellow-green when activated with blue light. The aim of the present study was to evaluate the level of agreement of Silness-Löe Plaque Index measurements using a fluorescent colouring agent among eight dentists.

Methods: Eight practice owning general dental practitioners (volunteers) in Cork, Ireland, were recruited as examiners for a randomised clinical study investigating the impact of a personalised caries prevention approach. Prior to the commencement of the study a training and calibration programme was delivered. The Clinical Research Ethics Committee of the Cork Teaching Hospitals approved the calibration exercise, subjects provided informed consent prior to being examined. The dentists were trained in the use of the Silness-Löe Plaque Index (1964) in the Oral Health Services Research Centre (OHSRC), Cork, in February 2015; Plaque Test[®] (Ivoclar Vivadent, Liechtenstein) was used to highlight plaque. The gold standard examiner (the Professor of Restorative Dentistry (Periodontology) in University College Cork) and the eight dentists examined 12 subjects (a convenience sample) aged between 19 and 75 years (mean age \pm SD: 40.9 \pm 23.9 years) who were recruited from patients attending the restorative clinic in the University Dental Hospital, applying Plaque Test[®] before each clinical examination. We calculated weighted Kappa statistics to evaluate the inter-examiner and intra-examiner reproducibility.

Results: The weighted Kappa statistics varied from 0.3 to 0.5 for inter-examiner reproducibility and from 0.4 to 0.7 for intra-examiner reproducibility. A problem reported by the examiners indicated that Plaque Test[®] did not stay on tooth surfaces and that it was difficult to detect plaque consistently.

Conclusions: The agreements of Plaque Index using Plaque Test[®] were fair to good in this calibration session. Although patients would prefer invisible agents to ordinal disclosing agents due to the advantage of not dyeing teeth and soft tissue, clinicians should note viscosity of Plaque Test[®] in use.

Methods of funding: The randomised clinical study was funded by The IADR Unilever Social Entrepreneur Approach to Change Oral Health Behaviour Research Award, 2014.

3282. GEO-MAPPING OF EARLY CHILDHOOD CARIES RISK – AN APPROACH FOR RESOURCE ALLOCATION

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Aim: The distribution of dental caries in children within the population is uneven. So, convenient approaches to population-based monitoring are needed to allocate resources and establish evidence-based programs that meet the needs of those at risk. The aim of this pilot study was to introduce the geo-map concept in oral healthcare and to demonstrate the novel approach by analysing epidemiological data from preschool children in the Manipur, India.

Methods: This pilot study comprised of randomly selected 384 children aged 6 years and below visiting the outpatient department of the Dental College, Regional Institute of Medical Sciences (RIMS), Imphal, Manipur, India, between June and September 2015. The number of individual children with a dmfs/DMFS>0 (no obvious caries) was recorded and each child was geo-coded with respect to his/her residence district. A relative risk (RR) was calculated as the observed-to-expected ratio, where the expected number of individuals with dmfs/DMFS>0 was obtained from the age- and sex-specific caries (dmfs /DMFS>0) rates for the total study population. Caries risk geo- maps, along with corresponding statistical certainty geo-maps, were produced by using geo-mapping software. Ethical approval for the study was given by the ethics committee of the RIMS.

Results: The overall mean number of teeth with obvious caries was 5.6 (+ 2.4). The mean dmfs/DMFT by district ranged for 4.6 (+ 2.7) to 6.4 (+ 2.8). The relative risk by district varied from 0.24 to 2.09. The geo-maps of preschool children displayed obvious geographical variations in caries risk. With increasing age, the difference seemed to reduce although the gross geographical risk pattern persisted with respect to the socio economic status.

Conclusion: Geo-maps based on caries risk may provide a novel option to allocate resources and tailor supportive and preventive measures within regions with sections of the population with relatively high caries rates.

3291. HISTORICAL TRENDS OF A NATIONAL ORAL HEALTH PROGRAM IN IRAN

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In the Islamic Republic of Iran the Ministry of Health and Medical Education is responsible for the levels of health service provision and to improve equitable access within a national economic, social and cultural development program. Within this program health service resources and facilities should be distributed in a way that no one seeking oral care within this public program should pay more than 30% of the costs (fee) and low-income people's share of the costs (fee) should be reduced to 1%. Oral health services are part of the national primary health care (PHC) network and are part of the national public health services, which are accessible in health centres all over Iran. In this program 0-12-year- old children and pregnant women have been priority groups since 1995. They can enjoy the oral health care, including oral health education, fissure sealants, fluoride therapy, fillings, scaling, extraction of infected teeth, for the same costs (fees) as those paid by others in the public sector. National surveys carried out in 1998, 2009, and 2013 have indicated the failure of this plan and a need to review and make substantial changes to it. Dental costs make up a large proportion of total health payments in Iran. Unofficial estimates have reported that patients must pay about 90% of costs out of their own pockets. In order to modify this existing oral health care system, the government developed a new plan for dentistry and implemented rural insurance in 2015. This program provides new opportunities to improve oral health and helps maintain health equity in terms of access to services and financial protection, based on universal insurance coverage. The necessary costs of the priority groups are paid per capita from health insurance credits (7% of all credits). For others, they are paid in the form of a fee for service. Studies carried out one year after implementation of the program showed an increase of 38%, 91% and 175% for tooth restoration, fissure sealants, and fluoride therapy, respectively. There has also been an 11% reduction in tooth extraction. In addition to enhancement of service coverage, the earnings of public sector dentists increased, as compared with those who deliver services in the private sector. For the public sector dentists, their salary increased from 1000 Euro to nearly 4000 Euro per month.

Methods of funding: Shiraz university of medical sciences

3298. ALBANIAN DENTISTS ATTITUDE TO PAIN FREE LOCAL ANAESTHETICS IN CHILDREN

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Local anaesthesia (LA) injections are stressful for the dental practitioner and the child patient. Managing and improving the skills of a dentist in giving pain free local anaesthetic injections will benefit both children and dentists. The aim of this study was to assess Albanian dentists attitude and perception about dental injections in children.

Methods: A questionnaire recording the dentist's attitude about pain-free Local Anaesthetic Techniques in Children was used. It was structured as anonymous with six closed questions using Likert scales. Information about gender, age, region and years of practice collected. It was distributed to a convenience sample of dentists participating in the 20th Annual Dental Conference in Tirana, Albania in November 2014. The information collected was analysed using IBM SPSS 20. Descriptive statistics and one way ANOVA was used in comparing groups. The results were evaluated within a 95% confidence interval. Statistical significance level was set at $p < 0.05$. Consent was assumed if the dentist agreed to take part.

Results: 86(42.4%) of respondents were male and 117(57.6%) were female. The mean age was 35 years (sd 10.1) and the mean clinical practice experience was 10 years (sd 9.5). In total 72(35.5%) of dentists believed that pain is inevitable during local anaesthesia in children and 158(77.8%) agreed that a cotton pellet should be applied with a topical anaesthetic. 128 (63%) of dentists believed in the possibility of pain-free local anaesthesia in children. There was a higher agreement in males but it did not reach statistical significance. There was a statistically significant higher agreement between dentists in Tirana (the Albanian capital) $p < 0.03$ compared with the other regions. Experience ($p < 0.2$) and age ($p < 0.9$) were not significant.

Conclusions: A majority of Albanian dentists report the importance of painfree dental injections in children.

Especially dentists in the capital agree on the need for painfree LA injections.

Methods of funding: Albanian Dental Association

3302. COMPARATIVE ANALYSIS OF CARIES TREATMENT OVER 9-YEAR PERIOD IN REGIONS OF RUSSIA

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Aim: to reveal changes in dental visiting and caries treatment in two regions of the Russian Federation over a 9- year period.

Methods: The retrospective study consisted of analysis of data from 2004 (n=203) and 2013 (n=180). The total number of patients: Kaliningrad 2004 year - 69 patients, Tambov 2004 year - 134 patients, Kaliningrad 2013 year - 73 patients, Tambov 2013 year - 107 patients. Patient records data using age groups 18-20, 21-30, 31-40, 40 years and older were analysed (CI - 0.95%, $p < 0.05$). The study was conducted in Kaliningrad and Tambov regional dental clinics. Patients signed informed consent. Our study was approved by the Ethics Committee MSMDU. Note that dental amalgam is not used in the Russian Federation currently.

Results: A frequency of attendance to a dentist declined from 1 per year in 2004 in Kaliningrad (37.6%, 26 patients) and Tambov (44.0%, 59 patients) to less than once a year in 2013 (Kaliningrad 53.4%, 39 patients; Tambov - 61.6%, 66 patients). The main reason for visiting dentist in 2004 was toothache in Kaliningrad 47.6% (41 cases), in Tambov 47.3% (70 cases). However in 2013 the commonest reason was filling loss in Kaliningrad 54% (87 cases), the Tambov 52.9% (82 cases). In Tambov chemical curing composite was the most common material and amounted 37.3% (50 cases) in 2004 and 77.5% (83 cases) in 2013. In Kaliningrad in 2004 the most common material was also chemical curing composite 49.3% (34 cases), light-cured composite wasn't used. However, in 2013 the use of light-cured composite increased to 86.9% (73 cases) and chemical curing composite wasn't used. The main reason for tooth extraction was "the destruction of the tooth crown" (Kaliningrad 2004 - 48.9% (46 cases), 2013 44.4% (56 cases);

Tambov 2004 - 42.1% (72 cases), 2013 55.2% (79 cases)).

Conclusions: the frequency of dental visits had decreased over this 9 year period. The main reason for a dental visit changed from “toothache” to “filling loss”; the use of light-curing composites has replaced chemical cured composite. The main reason for tooth extraction remained destruction of the tooth crown.

3303. USER PERSPECTIVES ON THE PUBLIC DENTAL SERVICES IN BRAZIL

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Brazil has a National Public Health System (SUS) which offers dental care to citizens. To assess dental care in SUS, the aim of the present study was to record service users perceptions.

Methods: A 2013 cross-sectional study based on data from 37,262 users (aged 18 years or more) of oral health services at primary care centers across Brazil. Public Health Centers participated in the survey under free will. At the participating centers, interviewers followed a random sample (refusal rate 20%) based in the waiting room. Each interviewer aimed to reach at least 4 users interviewed during the 5-hours-shift in the waiting room. The subject were interviewed by means of a national questionnaire from the National Primary Care Assessment Tool (PMAQ). Variables used in this descriptive study were qualified listening, resolution of problems, advice on oral health care, seen by the same dentist. Poisson regression with robust variance was used to calculate prevalence ratios with 95% confidence intervals of. The Federal University of Rio Grande do Sul ethics committee approved the study.

Results: 26,514 (71.1%) were female. Only 16346(56%) reported that the public dental service gave advice that solved their problems. Only 21706(58.2%) said that they were listened too when attended by the dentist. More positively, 27340(73.4%) reported they saw the same dentist over time. 7164(19.2%) reported that when they discontinued treatment the service contacted them to finish treatment.

Conclusions: The users perspective of the Brazilian Public health system reveals one far from a European primary health care system. Many improvements could be done in the Brazil public dental service. Seeing the same dentist over time and a good quality in the general assistance showed that efforts have being done to give SUS-users a good quality of oral health treatment in Primary Care.

Methods of funding: Social Dentistry Research Centre (CPOS).

3315. EFFECTS OF CHLORHEXIDINE-FLUORIDE VARNISHES IN OCCLUSAL FISSURES OF PERMANENT MOLARS

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Aim: To examine the effect of a new chlorhexidine-fluoride varnish on mutans streptococci (MS) counts and laser fluorescence (LF) readings in fissures of newly erupted permanent molars.

Methods: After getting ethical licences (TUKEB 193/2014, Dnr: 2014/262) the study group consisted of 57 healthy volunteered schoolchildren (7-14 yrs.) after informed consent. The sample size was determined by a power calculation. A double- blind split-mouth study was employed and 87 pairs of non-cavitated permanent molars were randomly assigned to treatments with either chlorhexidine-fluoride varnish (CHX-F, Cervitec F) or chlorhexidine-thymol varnish (CHX-T, Cervitec Plus) as active control. Three children had dropped out so the final results were based on 54 patients with 73 paired first and 8 paired second molars. The varnishes were topically applied at baseline and every 6th week throughout the 24-week

study period. Endpoints were MS counts (CRT test) and occlusal LF readings (DIAGNOdent pen) were registered regularly during follow-up by a separate examiner. Statistical analysis was performed with SPSS software (version 23.0). Follow-up values were compared with baseline registrations with chi-square or the non-parametric Wilcoxon paired test. For comparison between the two treatment groups, chi-square or a t-test corrected for multiple comparisons was made. The level of significance was set to 5% ($p < 0.05$).

Results: At baseline, >50% (54%) of the occlusal fissures harboured high MS counts (≥ 105 CFU) but an immediate significant decrease was found after treatment with both varnishes ($p < 0.05$). After 24 weeks, less than 5% (CHX-F: 2%, CHX-T: 4%) exhibited high counts. There was no significant differences between the varnishes at any time point. The mean LF values were similar in both treatment groups at baseline [6.9 ± 3.2 (mean \pm S.D.)] but a significant reduction was scored in the CHX-F group after 12 and 24 weeks (5.3 ± 2.3 and 3.8 ± 2.1 , respectively) ($p < 0.05$). A similar reduction was found also in the CHX-T group after 24 weeks (4.6 ± 2.5). No adverse events were reported.

Conclusion: There were no significant differences between the CHX-F and CHX-T varnishes in terms of MS suppression. Both varnishes reduced the LF readings significantly compared with baseline but further long-term studies are needed to confirm their caries preventive effect.

The study was partly supported by a grant from Ivoclar Vivadent AG, Schaan, Liechtenstein who also supplied the dental varnishes, chair-side tests and clinical disposals.

3319. CHILD DENTAL CARE PROGRAM (PADI) IN THE BALEARIC ISLANDS AFTER 11 YEARS

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The Balearic Islands Government Decree 87/2005, of 29 July, gave the right to free dental care to people aged 6 to 15 years residing in the Balearic Islands. This gives the population prevention and treatment of oral diseases in order to reduce differences of the population through care and maintenance of oral health. Care is provided through a large list of dentists, to ensure access and acceptability. This study aimed to evaluate the data from 11 annual reports of the Programa de Atenció Dental Infantil (Children's dental care program) PADI, in the Balearic Islands public health service IbSalut. PADI uses the public healthcare network and private dentists through capitation payments. PADI is in eight Autonomous Regions in Spain: Andalusia, Aragon, the Balearic Islands, Extremadura, Murcia, Navarra and the Basque Country.

Method: By 2015 development of PADI had taken 11 years and for the first time 16-year-olds had completed the program. Analysis of activity and economic data from 11 PADI annual reports was undertaken. Monthly data is reported by dentists using excel files sent to the PADI Office, IbSalut.

Results: A total of 160 dentists are in PADI. Population coverage has stabilized around 33% with a peak in 2011 of almost 37% of the population. The care provided by dentists is adequate, with a predominance of preventive activities. Children in the units of oral health in primary care have required a larger number of extractions and pulp treatments, reflecting the use of this public network by children with greater medical and social complexity. In 2015 private dentists saw 73%, of children, with a total of 27,829 (out of a population of 114,007 children between 6 and 15 years old). This cost €1,306,084, of which €1,279,766 was made in capitation payments: €46 / child, and €26,318 for special treatments. In 2015 this represented 0.1% of Balearic Health Service expenditure.

Methods of funding: Balearic Health Service

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3269. ORAL HEALTH-RELATED QUALITY OF LIFE AMONG THE PARENTS OF PRE-SCHOOL CHILDREN

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Aim of the study was to assess the prevalence, frequency and severity of oral impacts on health-related quality of life among the parents of pre-school children in Klaipeda city, located on the Baltic Sea coast. Klaipeda is an untypical city, because it is a member of Healthy City Network, actively implementing different health promoting activities.

Methods: Oral Impacts on Daily Performance (OIDP) self-administered questionnaire was used. The individual OIDP score was obtained when the sum of the eleven scores was divided by the possible maximum performance scores. Percent of persons affected, mean frequency, severity, individual OIDP scores and standard deviation were calculated. The study was approved by the local Bioethics Commission in Klaipeda State University of Applied Sciences. Only Lithuanian language speaking kindergartens were included, because the questionnaire was validated in Lithuanian language. So there were 35 in total Lithuanian speaking kindergartens, but only 23 of the participated, that was 65.7%. 12 kindergartens refused to participate in the survey. In total there were 42 kindergartens in Klaipeda. It was convenience sample, consisting of the 375 parents of pre-school children. Only one of the parents of each child participated in the survey. The parents have signed an agreement with the kindergartens, that they are giving a consent for their children to participate in the surveys. **Results:** 327 (87.4%) of mothers and 330 (88.0%) of fathers were 25-44 years old. The highest prevalence of oral impacts was in the item Eating and enjoying food n=66 (17.6%), the lowest one in Performing light physical activity n=11 (2.9%). The greatest means of frequency of those affected were in Speaking and pronouncing clearly (3.0; SD 1.37) and Smiling and laughing (3.0; SD 1.44) items. The most severe effect was observed in Enjoying contact with people (3.08; SD 1.38).

Conclusions: The most prevalent (17.6%) reported impact was on Eating and enjoying food, nevertheless the impact was significant in physical, emotional and social dimensions.

3280. CHILD-ORAL IMPACTS ON DAILY PERFORMANCE(CHILD-OIDP) IN CHILD PATIENTS IN A ATTENDING DENTAL SCHOOL: A PILOT STUDY

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Oral Impacts on Daily Performance (OIDP) assesses impacts of oral health conditions that affect daily activities of an individual and is commonly used as oral health related quality of life (OHRQOL) indicator. The aim of this study was to evaluate OHRQOL in Turkish children attending a dental school by using Child Oral Impacts on Daily Performance (C-OIDP) questionnaire.

Methods: This research was approved by Marmara University Institute of Medical Sciences, Non-invasive Clinical Researches Board of Ethics (22.02.2016-24). All relevant information and consent forms were signed by the parents of the patients. The survey was conducted during the period April 2015-January 2016 and information was collected on 72 children aged 8-14 years, attending the dental school in Istanbul, Turkey. A modified questionnaire including sociodemographic information was used. C-OIDP has been validated in Turkey (Can S., Turkish Adaptation of an Index in Foreign Language: Child Oral Impact on Daily Performance. EÜ Dışek Fak Derg 2009; 30: 97- 103.) Oral impact of daily performance was obtained by adding scores for eight items. During the past 6 months how often have problems arisen with their mouth and teeth which caused them difficulties with 1) eating, 2) speaking, 3) cleaning teeth, 4) sleeping,

5) smiling without embarrassment, 6) emotional status, 7) enjoying social contact and 8) doing homework. Each impact score was calculated by multiplying the frequency (0 to 3) and severity (0 to 3). Then, the scores of the eight performances were summed. Finally, the overall score was the sum divided by 72 (maximum possible score) and multiplied with 100 to give a percentage score. A child can have no oral impact (score = 0) or maximum oral impacts (score = 100).

Results: 76 % of children had one or more oral impacts. The mean score of OIIP was 9.16 ± 11.12 . Eating was the most common performance affected ($n=39$, 54%). The prevalence of oral impacts was high for eating and cleaning teeth and low for doing homework and social contact performances.

Conclusion: This pilot study revealed that oral impacts on quality of life are prevalent among children attending a University dental clinic for treatment. The impacts are mainly related to difficulty eating. Further longitudinal studies should be performed to better understand OIIP measures in children.

3296. FACTORS, KNOWLEDGE, USE AND PURCHASE OF SUPPLEMENTARY ORAL HYGIENE PRODUCTS IN TURKEY

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Aim: Turkish oral care behaviors show less than one toothbrush and less than 110g toothpaste used per person per year (Dental Association 2014). Consumer reports show that 69% brush their teeth, 16% use floss and 9% use mouthrinse during selfcare. This study planned to test if sociodemographic factors were linked to oral health knowledge, hygiene practises and purchasing supplementary oral hygiene products.

Methods: A questionnaire on sociodemography, oral health perception, use of dental products for oral care, and dental knowledge was used through face-to-face interviews in three supermarkets in the Istanbul/Fatih Region with permission from the Faculty of Dentistry after the study was approved as a dissertation thesis. Sample size calculation estimated ($n=t^2pq/d^2$) that 384 responses were needed. Data were analysed by SPSS 18, using chi-square, Mann-Whitney, and Kruskal Wallis tests.

Results: 395 people 18-65 years of age completed the questionnaire. All participants knew about and 235 used at least one supplementary item (59%). The four most often reported were dental floss, tongue cleaner on a toothbrush, toothpick and mouth rinse without gender differences. Education affected knowledge. Participant's knowledge on using supplementary products was associated with education and self rated oral health ($p<0.05$), while knowledge on the importance of using other dental products for removing plaque was related to gender, age, education, monthly income and self rated oral health ($p<0.05$). There were significant differences in the frequency of tooth brushing by gender, age, education, monthly income and self rated oral health. The use of floss was related to gender, age and education. The use of both fluoridated mouthwash and interdental brushing was associated with education. Increased brushing frequency and level of perceived oral health affected usage $p<0.05$. Brushing frequency was not associated with the reason for use of supplementary products which were; mouth cleanliness, periodontal health, brushing inadequacy when used alone. Advice from a dentist was the main factor to drive purchases in both genders and in all age groups. Education didn't affect purchasing motive.

Conclusions: Efforts are needed to improve low oral health literacy and to promote self care behaviour in Turkey. Dentists may play an important role in enabling their patients to increase control over their oral health and promoting use of supplementary oral hygiene products additional to toothbrush and paste.

3308. A RESPONSE TO ORAL HEALTH INEQUALITIES: A FRENCH HOSPITAL-BASED ORAL CONSULTATION

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Background: The French welfare system covers basic oral care except for prosthetic rehabilitation. As a result, underserved people can't access such care. To limit oral health inequalities, in France, the Ministry of Health has established general and dental consultations in some public hospitals, in a program called PASS (health-care access points). Aims The aim of this poster is to explain how a dental-care access point in a Parisian hospital, which opened in 2013 for adults operates and to list its clinical activity for 2015.

Methods: A patient who wishes to be treated at a PASS is interviewed by a social worker, who then refers the patient to the dental service if they can benefit from this program. During the first appointment, a clinical and radiological examination is performed. A committee, which meets once a month, accepts or not the recommendations of the dental team and authorises payment. The dental care provided is evidence-based and ethical.

Results: In 2015, 190 patients were treated, of whom 153 were seen for the first time: 111 men (58%) and 72 women (42%) (mean age 39 years). The type of housing where they lived was: in their own homes 70 (37%) accommodation in the family or with friends 68 (36%), in voluntary homes (government/charity funded accommodation) 29 (15%). Twenty three (12%) were homeless. Their financial situation was: 90 (52%) had no resources, 38 (20%) received basic welfare benefits, 27 (14%) were employed, and 26 (14%) were retired. The dental

care which they received was: complete oral rehabilitation for 95 patients, of whom 90 patients are still receiving ongoing care and 5 gave up at the prosthetic stage. The dental procedures conducted were: 590 radiographic evaluations, 50 periodontal treatments, 38 endodontic treatments and 109 restorative treatments, 93 extractions and 77 fixed or removable prostheses.

Conclusion: This program improves the quality of health care and social services and ensures better integration of underserved people into their communities. Nevertheless, there are still obstacles to treatment for these persons, other than financial ones. They include: language, cultural habits, homelessness, length and difficulty of treatment. The social network helps to support underserved people in their medical and dental care. The positive assessment of this program encourages the hospital to develop the same initiative for children who need care as well as orthodontic treatments.

3314. ASSOCIATION BETWEEN MOTHERS AND FATHERS ORAL HEALTH-RELATED AND OVERALL QUALITY OF LIFE

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Aim: To evaluate associations within the family between mothers and fathers quality of life (QoL) and oral health related quality of life (OHRQoL) during pregnancy.

Methods: This study used data from the FinnBrain Cohort study. The Intermunicipal Hospital District of Southwest Finland has given an ethical clearance for the FinnBrain Cohort study in 14.6.2011. Recruitment took place at maternal welfare clinics in 2011–2015 in the South-Western Hospital District and the Åland Islands in Finland. Of those informed about the study, a total of 66% (3,808/5,790) mothers and 2,624 fathers decided to participate. The data for this study were collected at pregnancy week H34 when 2,609 mothers and 1,507 fathers returned the questionnaires. For this study, only those families in which both mother and father returned the questionnaires were included (n=1,468 mother-father pairs). OHRQoL was measured with the Oral Health Impact Profile-14 (OHIP-14) questionnaire and QoL with the World Health Organization Quality of Life (WHOQoL-8) questionnaire. OHIP-14 response alternatives to perceived oral impacts varied from 0=never to 4=very often, and severity score (sum of responses, scale 0–56, 0 being the best) was calculated. WHOQoL-8 response alternatives varied from 1=very poor to 5=very good. Associations between mothers' and fathers' WHOQoL-8 item scores and mean score and OHIP-14 severity score were studied using Spearman correlation coefficients.

Results: Overall, the participants had good OHRQoL, mean severity score being 1.62 among mothers and 2.07 among fathers. Correlation between mothers and fathers OHRQoL was very weak ($r=0.087$, $p=0.001$). Moderate correlations between parents were found in QoL total sum ($r=0.318$) and items "ability to perform daily activities" ($r=0.377$) and "satisfaction for living place" ($r=0.306$), and weak correlations in items "quality of life" ($r=0.210$), and "satisfaction for financial situation" ($r=0.266$) ($p<0.001$ for all).

Conclusion: Mothers and fathers show moderate associations on quality of life but weaker correlations on oral health related quality of life.

Supported by Finnish Academy, Jane and Aatos Erkko Foundation and the Finnish Dental Society Apollonia.

3317. INFLUENCE OF PARENT'S EDUCATION ON SELF-PERCEIVED ORAL HEALTH IN CHILDREN

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Parental socioeconomic characteristics are related to their children's subjective perception on oral health.

Aim: To correlate the educational level of each parent, an individual-level indicator of socio-economic status (SES): with self-perceived oral health in a 12-year-olds in the region of Skopje.

Method: Cross-sectional design. The study sample was randomly drawn with a two-stage cluster sample from 12 year olds from the capital town of Macedonia-Skopje. The study was conducted in November-December 2015. Data were collected by the adapted and translated WHO Oral Health Questionnaire for children. Participation was voluntary

and consent to participation was given by completing and returning the questionnaire. Of 307 questionnaires, 218 were returned. Since the questionnaire was used as a part of the National survey of oral health of 12 year olds in Macedonia, as part of an audit of the national programme, it did not require separate ethics approval. The data analysis was carried out by IBM SPSS Statistics 20.

Results: The study included 218 children (71% response rate) in total, 103(47.2%) male and 115(52.8%) female. Out of all the children who rated their teeth and gums health as excellent/very good, 66(71%), 77(67.5%) respectively, had mothers with a university degree. The children who rated their teeth and gums health as fair/poor, 84.7%, 85.7% respectively, had mothers with an education level below a university degree.

Conclusions: The mother's educational level had an impact on children's subjective perception of oral health. Children living with parents with higher educational level generally report better oral hygiene behaviors, access to health care and preventive interventions. The present study shows that parents educational level could be a useful individual SES indicator for oral health in children and health managers might use this factor when planning oral health promotion interventions.

Methods of funding: The Coordinative Body for implementation of the National preventive programme in oral health in Macedonia

3325. EVALUATING CHILDSMILE'S DENTAL HEALTH SUPPORT WORKER ROLE: REALIST COMPARATIVE CASE STUDIES

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Childsmile, the national oral health improvement programme for children in Scotland, aims to reduce oral health inequalities and improve access to dental services. Childsmile is delivered, in part, by a new category of lay or community-based worker known as a Dental Health Support Worker (DHSW). DHSWs support families to improve oral health behaviours and attend dental practice.

Aims: To compare delivery of the DHSW role between NHS boards in Scotland, in order to gain an in-depth understanding of which variants impact on effectiveness of the DHSW role and establish what works, for whom and under what circumstances. Findings will be fed back to the programme to improve delivery of the role.

Methods: Explanatory case studies explored causal links between context, delivery and outcomes. Case study units comprised one DHSW and key stakeholders involved in delivery of the role from three NHS boards. Case studies and participants were selected using theoretical sampling based on characteristics integral to delivery of the role. Twenty six interviews and ten observations involving sixteen stakeholders explored factors impacting on delivery of DHSW role. Sessions were recorded and transcribed. Realist-inspired analysis, whereby mid-range theories and context, mechanism and outcome configurations were identified within cases, and cross case analysis was conducted (Pawson et al 2005). University and NHS ethical approval was granted and consent obtained for each participant.

Results: Key mid-range theories include: (1) Wider Context: Embedding of Childsmile within existing healthcare policy and delivery over an extended period of time has improved stakeholder buy-in. There is reluctance among some dental practices to engage with Childsmile due to the perception of costs outweighing benefits. This increases DHSW workload and contributes to a lack of continuity of care. (2) Nature of DHSW Support: Delivery of the DHSW role involves information provision and linking families with a dental practice. To address programme aims, oral health attitudes and parenting behaviours of high risk families must be addressed (Ajzen 1988, 1991). This requires additional DHSW training and a greater focus on those families at highest risk. (3) Parenting Behaviours: DHSWs typically receive referrals for low-risk families already engaging in oral health parenting behaviours who are motivated and receptive to oral health advice. Thus the role concentrates on reinforcing existing positive behaviours rather than behaviour change of high risk families. Supporting low risk families is not an effective use of DHSW time and shifts resources from those who need it most.

Conclusions: A “one size fits all” approach is not suitable for the DHSW role and variation can be facilitative. Programme theory requires further development to ensure targeted referrals for high risk families, implementation of behaviour change theory in the DHSW role, and partnership working with dental practices to address programme aims of reducing inequalities in oral health and improve access to dental services.

The project is funded by the Scottish Government.

3326. LOOKED AFTER CHILDREN AND ACCESS TO DENTAL SERVICES AND ORAL HEALTH

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Children that are “looked after” include those that are accommodated in foster, kinship and residential care placements, as well as those at home on compulsory supervision. They have poorer physical and mental health than their peers and there are concerns about the relatively high levels of untreated morbidity. Oral health and access to dental services among Looked After Children (LAC) has received limited attention to date. The objective of this study was to compare the oral health and access to dental services of children who are looked after by the state, with comparable children in the general population.

Methods: School and Social Work datasets were able to be linked using the Scottish Exchange of Data (ScotXed) Unit. This in turn was linked with health data making use of the Scottish national record-linkage system provided by the NHS eDRIS team for the FARR Institute Scotland. All of the following datasets used in this study are complete national datasets for the time periods noted. School Pupil Census 2012: a census of children in local authority primary and secondary schools that provides each child's age, sex and socioeconomic status as measured by the Scottish Index of Multiple Deprivation (SIMD). The other datasets cover the period 2008-2012: LAC- all children with social work referrals for various types of placement; attendance at dentists; hospital discharge data for all episodes of tooth extraction; National Dental Inspection Programme (NDIP) data from Primary 1 and Primary 7 school years (dental decay). The LAC group were compared to their peers by logistic regression adjusted by age, sex and SIMD; using remote access to the National Safe Haven. Ethics and information governance approvals were obtained from the University of Glasgow Ethics Committee and the NHS National Services Scotland Privacy Advisory Committee.

Results: There were 633,204 subjects in the study group (10,927 LAC, 622,280 nonLAC). Ages ranged from four to 17 years (mean 12 LAC and 10 nonLAC); with n=5,815 (53%) male for LAC and n=316,719 (51%) nonLAC; and n=4,548 (42%) in the most deprived SIMD level for LAC and n=129,741 (21%) for non-LAC. The subjects in the LAC group were more likely to have dental decay at Primary 1, odds-ratio (OR) 2.65 (2.30, 3.05), and Primary 7, OR 1.79 (1.70, 1.92). LAC subjects were less likely to regularly attend a dentist, OR 0.55 (0.53, 0.58), and more likely to have teeth extracted, OR 1.91 (1.78, 2.04). All tests p<0.001.

Conclusions: Looked after children are more likely to have dental problems and less likely to access dental services than their peers, after adjustment for age, sex and socioeconomic status.

Methods of funding: National Records Scotland -cross-sectoral data linkage pathfinder grant.

3336. CHANGES IN ADULTS' HABITUAL VISITS TO A DENTIST

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Aim: To evaluate changes in habitual use of dental services by gender and age groups in an adult population during 11 years in a nationally representative setting.

Methods: The data were collected by interviews as a part of the Health 2000 and Health 2011 programmes, during which 7,964 Finnish adults aged ≥ 30 years were surveyed. The Ethics Committees of the National Public Health Institute and University Hospital Region of Helsinki, Finland gave permission to these National Surveys. The participants were asked if they visited dentist: regularly for checkups, or only when having pain or other trouble, or never. The first option indicated habitual and the last two non-habitual visits to a dentist. The participants were categorized according to their year of birth: born 1971 or after, 1956-1970, 1946-1955 and 1945 or before. The changes were evaluated with cross-tabulation and the McNemar-test.

Results: 4,053 participants (51%) answered the question in both years. Habitual use of dental services was more common among women (66% in 2000 and 69% in 2011) than among men (53% in 2000 and 57% in 2011). The proportion of those reporting habitual visits changed according to age and gender as follows: among men born 1971 or later from 42% to 52% ($p=0.009$), among women born 1971 or later from 59% to 66% ($p=0.057$), among men born 1956-70 no change, 56% in both years ($p=0.604$), among women born 1956-70 from 70% to 72% ($p=0.267$),

among men born 1946-55 from 54% to 64% ($p<0.001$), among women born 1946-55 from 70% to 72% ($p=0.456$), among men born 1945 or before from 59% to 55% ($p=0.193$) and among women born 1945 or before from 62% to 65% ($p=0.223$), i.e. the changes in habitual use were statistically significant only among men in two age groups.

Conclusions: The changes in habitual visits to a dentist were not substantial. Habitual service use was the pattern among the majority of adults in all age groups and among both genders during the 11 year period.

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Session 5a

Older people epidemiology

3263. THE ORAL HEALTH OF ADULT POPULATION WITH PROSTATITIS

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The aim of this study was to assess the prevalence of dental caries and periodontal diseases amongst an adult population of Baku with prostatitis.

Methods: The study took place between October 2007 and March 2008 in the urological department of the Central Hospital of Oilers and the Hospital of the Republic. Oral health examinations were performed on all 172 adults with acute and chronic prostatitis from the age groups: 40-44, 45-49, 50-54, 55-59, 60 years and older who resided in Baku city, attended the two hospitals during the period of the study and consented to take part. The examinations took place in the two urological departments. A control group of 190 adults, matched for age, but without prostatitis were examined during the same time period. The WHO 1997 criteria were used for diagnosis and recording of DMFT index and periodontal status, using a visual method with mouth mirrors, dental and periodontal probes, daylight illumination. Dental caries was diagnosed at the caries into dentine at the (D3) threshold. Ethical approval was obtained from the Ethics committee of the Azerbaijan Medical University.

Results: Results demonstrated a caries prevalence of 100% in the prostatitis group and a mean DMFT for all ages of 10.67 of which a very high proportion was due to missing teeth ($M=9.13$) and a very low proportion to filled teeth ($F=0.22$). The mean D component (decayed teeth) was 1.32. In the control group there were similar values. Prevalence of gingivitis for all ages was 20% (35 patients) and 13% (25 patients) in control. The prevalence of periodontitis was 28% (48 patients) in the prostatitis group and 16% (30 patients) in the control group. The prevalence of periodontitis increased with age. Most people suffered with the early form of periodontitis. In both groups there was a preference for mobile teeth to be extracted rather than for periodontal treatment.

Conclusion: In the groups studied there was a higher prevalence of dental caries and periodontal diseases amongst the patients with chronic prostatitis.

Methods of funding: Azerbaijan Medical University, Baku, Azerbaijan

3272. COMPARISON OF RESULTS USING ICDAS AND DMFS IN MOSCOW ADULTS

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During the 3rd National Oral Health Survey in Russia, questions have been raised whether a more advanced method of caries detection (used in conjunction with the standard method) is more suitable and realistic in domestic conditions. The aim of this study was to compare differences in caries diagnosis results and measurement duration between DMFS and ICDAS.

Methods: Fifty volunteers aged 35-44 years old comprised a convenience sample in a pilot study and were examined by one dentist in Moscow. Evaluation of dental caries was performed using DMFS. Additionally, the mean number of non-cavitated caries lesions (codes 1-2) and cavitated (codes 3-6) were evaluated by ICDAS criteria. The mean scores of DMFS and ICDAS were compared using T-test. Measurement duration of both ICDAS and DMFS was recorded. Intra-examiner reliability was measured by Kappa. The study was approved by Ethical Committee of Moscow State University of Medicine and Dentistry.

Results: The mean number of decayed tooth surfaces (D-component of DMFS) was 3.35 ± 0.71 : occlusal surfaces

– 1.96 ± 0.52 ; smooth surfaces – 0.28 ± 0.11 ; approximal surfaces – 1.11 ± 0.27 . During examination using ICDAS criteria, the mean number of carious tooth surfaces was 10.88 ± 1.07 , of which 6.88 ± 0.77 (63.2%) were non-cavitated. Specifically, 2.60 ± 0.34 non-cavitated lesions were detected on occlusal surfaces, 3.40 ± 0.42 on smooth surfaces, and 0.88 ± 0.18 on approximal surfaces. The mean number of cavitated lesions was 4.00 ± 0.52 (yielding a non-significant difference of 16.3% compared with DMFS D-component 3.35 ± 0.71 , $p>0.05$). The number of decayed occlusal surfaces was 2.05 ± 0.41 , smooth surfaces – 0.36 ± 0.13 , and approximal surfaces – 1.59 ± 0.42 , showing a difference of 4.4%

(1.96 ± 0.52), 22.2% (0.28 ± 0.11), and 30.2% (1.11 ± 0.27), respectively, compared with the DMFS D-component, which was not significant ($p>0.05$). However, the difference between mean scores of DMFS and ICDAS was significant (3.35 ± 0.71 versus 10.88 ± 1.07 , $p<0.01$); the same tendency was observed on occlusal, smooth and proximal surfaces (1.96 ± 0.52 and 4.65 ± 0.84 , $p<0.01$; 0.28 ± 0.11 and 3.76 ± 0.72 , $p<0.001$; 1.11 ± 0.27 and 2.47 ± 0.65 , $p<0.05$). Intra-examiner reliability for caries diagnosis by ICDAS was good (Kappa=0.76). Measurement duration for DMFS and ICDAS was 4.5 ± 0.7 and 12.3 ± 3.4 minutes, correspondingly, but did not include time duration required for professional teeth cleaning before ICDAS diagnosis.

Conclusions: Evaluation of dental caries in adults is improved using ICDAS, compared to assessment by DMFS; however, a longer time commitment should be taken into consideration by researchers while planning objectives of epidemiological studies using ICDAS. Additionally, ICDAS is a suitable and realistic (additional) tool for dental research in Russia.

3273. ORAL HEALTH STATUS AMONG ADULTS IN MAKHACHKALA IN 1999 AND 2015

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Previous studies such as the National Oral Health Survey (1999) have indicated that the prevalence of oral diseases among adults in Dagestan Republic and its capital Makhachkala was high.

Aim: The aim of the study was to evaluate the prevalence of dental caries and periodontal diseases among 35-44- year-olds living in Makhachkala over a 16-year period.

Methods: Fifty 35-44-year-olds living in Makhachkala were randomly selected and examined for oral health status in 2015. The individuals all gave informed consent and the study was approved by the Ethics Committee of the Moscow State University of Medicine and Dentistry. An oral health examination was performed by calibrated dentists according to WHO criteria (2013). Dental caries prevalence was scored using DMFT. Periodontal status was evaluated using CPI. All teeth present in the mouth were examined for absence or presence of gingival bleeding, dental calculus and periodontal pockets. The prevalence of dental caries and periodontal diseases were compared to results from the year 1999. The survey was cross-sectional. The t-test was used to compare differences in mean scores.

Results: The prevalence of caries was 100% in 1999 and 98% in 2015. Mean DMFT values decreased from 14.9 ± 0.98 in 1999 to 12.1 ± 0.84 in 2015 ($p < 0.05$). The mean number of decayed teeth decreased from 6.73 ± 0.66 in 1999 to 4.80 ± 0.57 in 2015 ($p < 0.05$); an even more significant decrease was observed in mean numbers of missing teeth from 4.81 ± 0.45 in 1999 to 2.56 ± 0.28 in 2015 ($p < 0.001$). The mean number of filled teeth increased from 3.35 ± 0.44 to 4.74 ± 0.50 ($p < 0.05$). The prevalence of periodontal diseases CPI score > 1 was 100% in 1999 and 98% in 2015. The number of adults with gingival bleeding (CPI = 1) and dental calculus (CPI = 2) increased over a 16-year period from 4% to 30% and from 52% to 58%, respectively. At the same time, prevalence of periodontal pockets (CPI = 3 or 4) decreased from 44% in 1999 to 12% in 2015. The number of sextants with CPI scores > 1 decreased from 5.61 ± 0.53 in 1999 to 4.68 ± 0.42 in 2015 ($p > 0.05$).

Conclusions: Results of the study showed a significant decrease in dental caries and periodontal diseases prevalence among a group of 50, 35-44- year-olds in Makhachkala from 1999 to 2015. The analysis of data can be used as a baseline for planning strategy of oral diseases prevention for adults in this region as well as serving as a database for further monitoring of oral health status in this region.

3288. DENTAL STATUS OF SMOKERS BASED ON THE BACKGROUND PATHOLOGY OF INTERNAL ORGANS

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Smoking is one of the most important public health problems worldwide. It causes or is a contributory factor for many diseases including gastrointestinal and respiratory diseases.

Aim: This study aimed to compare the oral health status of smokers with gastrointestinal or respiratory disease with non-smokers who also had these diseases.

Methods: Over a three year period, the study recruited 82 patients of dental clinics in Moscow, who had gastrointestinal and/or respiratory diseases. They were both men and women aged 41 to 70 years average age of 60.1 ± 0.9 years. Patients were divided into groups: gastrointestinal disorders (Group 1 - 20 smokers, Group 2 - 22 non-smokers) and with respiratory diseases (Group 3 - 20 smokers, Group 4 - 20

non- smokers). The study was conducted with the permission of the Inter- University Ethical Committee of Moscow. The following oral assessments were made: OHI-S, DMFT, gingival bleeding: sialometry to assess the buffering capacity of saliva, microbiology assay of scrapings from the tongue. **Results:** As far as xerostomia was concerned in Group 1 this was found in 11 (55%), in Group 2 in 10 (45.5%), in Group 3 in 17 (89.5%) and in Group 4 in 15 (71.4%) of patients. Gingival bleeding was found as follows: in Group 1 in 18 (90%), in Group 2 in 16 (72.7%), in Group 3 in 19 (95%) and in Group 4 in 16 (80%). The mean (DMFT) was 22.7 ± 0.8 in Group 1, 25.0 ± 0.9 in Group 2, 21.0 ± 0.5 in Group 3 and 20.4 ± 0.5 in Group 4. The results for several other clinical findings, including salivation rates and microbiological assays are reported in the poster.

Conclusion: In the groups studied smokers appeared to have higher levels of oral disease. Further investigation with larger groups and statistical testing is required to confirm these findings.

Methods of funding: Moscow State University of Medicine and Dentistry name of A.I.Evdokimov.

3289. ORAL HYGIENE EFFECT ON SALIVA IN YOUNG PEOPLE WITH DIFFERENT CARIES PREVALENCE

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Aim: To assess the influence of tooth-brushing on saliva crystallisation in young adults with different prevalence of dental caries.

Methods: Eighty medical students who were randomly selected (48 females and 32 males) aged 20-25 (average 21.6) years and participated in the study after consent and approval of the University Ethics Board. The DMFT of all the students was assessed and they were divided into three groups: A – 23 subjects with low DMFT (1.9 ± 1.02), B – 30 subjects with high DMFT (6.3 ± 1.78), C – 27 subjects with a very high DMFT (12.4 ± 1.96). Three drops of resting saliva were collected from each student, placed on a glass slide, air dried and studied under a microscope. Two types of saliva crystals were identified: I - centripetal and II – diffused (Leous, 1977). All subjects were asked to complete one-month home regular tooth-brushing twice per day with the same fluoride tooth paste and a manual toothbrush. The saliva tests were performed at baseline and after one month. Pearson chi-square test was applied to the resulting data.

Results: At baseline, Type I saliva crystals were seen in 17 ($74 \pm 9.1\%$) subjects from A group, 28 ($93 \pm 4.7\%$) subjects from B group and in 14 ($52 \pm 9.6\%$) of subjects from C group ($p < 0.05$). Type II were seen in 6 ($26 \pm 9.1\%$), 2 ($7 \pm 4.7\%$) and 13 ($48 \pm 9.6\%$) subjects from A, B, C groups respectively ($p < 0.05$). After one month of tooth-brushing, the following changes in saliva crystals were observed: Type I in A and C increased to 21 ($91 \pm 6.0\%$) and 27 ($90 \pm 5.8\%$) of subjects ($p < 0.05$); type II in these groups reduced to 2 ($9 \pm 6.0\%$) and 3 ($11 \pm 6.0\%$) of subjects ($p < 0.05$); no changes were seen in B group.

Conclusion: In the young adults studied, in those with a lower prevalence of dental caries the centripetal type (I) of saliva crystals were more frequent than diffused ones. Regular tooth-brushing for one month promoted an increase in type I crystals in subjects with a very high level of caries, fluoride toothpaste and twice daily brushing should be recommended to young adults with high DMFT scores.

Method of funding: Belorussian State Medical University.

3304. PATHOLOGIC CHARACTERISTICS OF PATIENTS WITH LICHEN PLANUS OF THE ORAL MUCOSA

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The aim of this project was to study the psychoemotional (anxiety) state of patients with the different clinical forms of oral lichen planus (OLP).

Methods: All 139 patients, who attended the Dental Therapeutics Department of the Tashkent State Dental Institute between September 2012 and September 2015, with the different clinical forms of OLP and who agreed to take part, were included in this study. Of the total, 36 patients had the typical form of OLP, 34 had the exudative-hyperemic form, 42 the erosive-ulcerous form and 27 the bullous form. A random selection of 40 patients without pathology of oral mucosa and skin were recruited as the control group. All patients gave informed written consent and the study was approved by the ethics committee of the Tashkent Institute of Postgraduate Medical Education. The anxiety of patients with OLP was estimated using self-appraisal scale of Spielberg and Khanin (2002). We estimated the state of reactive anxiety – RA and personal anxiety – PA (as stable personal characteristics). The appraisal scale includes 20 questions (10 of them characterize emotions, tension, anxiety, preoccupation, and 10 characterize absence of anxiety), which the patients evaluated themselves. Scores of 30 and lower are considered as low anxiety, 31-45 as moderate anxiety, 46 and higher as high anxiety. Differences between the control and OLP group were tested using the Student t test. The level for a statistically significant difference was set at $p < 0.05$.

Results: In the control group RA was low in 26 patients ($65 \pm 7.5\%$) and RA was moderate in 14 patients ($35 \pm 7.5\%$). The mean RA for the control group was 36.6 ± 2.7 and was considered as moderate anxiety. For patients with OLP, 39 had a low level (28 ± 3.8), 88 (63.3 ± 2.3) a moderate level RA and 12 (8.6 ± 2.3) a high level. The mean PA for the control group was $37.8 (+1.8)$ and in the OLP group it was $62.3 (+2.8)$. The RA and PA for each form of OLP has not yet been calculated.

Conclusions: Patients with OLP reported higher rates of RA and PA than those in the control group. RA was 31.9% ($p < 0.05$) higher and PA was 64.7% ($p < 0.05$) higher. There was a progressive increase of RA and PA with increase severity of OLP suggesting the possible need for “soft” psychomotor medication in the treatment of such patients.

3310. PRISONERS CARIES, PERIODONTAL STATUS AND ORAL HEALTH-RELATED HABITS

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The aim of this study was to examine oral health and oral health related habits among the prisoners in Pelso, Finland. **Methods:** Data collection was done September 2014 - February 2015. The study population comprised 100 prisoners: 89 males, 11 female, who had a clinical examination. Of the clinically examined prisoners, 50 were also interviewed (the mean age of respondents was 35 years) recording age, marital status, education and oral health-related habits such as brushing teeth, snacks and use of drugs and alcohol. Associations between the outcome and explanatory variables were analysed using cross tabulation; significance of differences between groups was tested using chi square test. The Ethical Committee of the Northern Ostrobothnia Hospital District and Criminal Sanctions Agency approved the study.

Results: The mean DT was 5.0 (SD 5.1). In DMFT [16.6 (SD 8.9)] FT comprised 6.9 (SD 5.2) and MT 4.7 (SD 6.1). Half of the whole study population (52.5%) had a CPI score of 2. Almost all $n=47$ (98%) reported brushing their teeth daily; of them less than half two times a day (40%). Two thirds ($n=30$, 60%) reported eating sweets every day, one third ($n=17$, 33%) drinking soft drinks and a majority ($n=44$, 88%) smoking, but only one in five ($n=10$, 20%) using snus. Almost two thirds ($n=31$, 62%) had used illicit drugs over the course of their life. Almost all ($n=44$, 88%) drank alcohol once a week or more often. No statistically significant differences were discovered between dental treatment need and explanatory factors.

Conclusions: Oral health-related habits among this group of prisoners can be considered harmful for the dentition.

This group is homogenous for poor oral health and harmful dental behaviours.

3313. HALITOSIS AND ORAL HEALTH BEHAVIOUR IN DEBRECEN, HUNGARY

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The aim of this study was to investigate the prevalence of halitosis in different age groups in a general population in Debrecen, Hungary and to investigate the factors that may be associated with halitosis.

Method: Participants were recruited in connection with their annual examination at the Faculty of Dentistry, University of Debrecen. Volunteers were informed about the aims of the study and the proposed methods. Their written consent was obtained before the study began. The study protocol was approved by the Committee of Ethics in Clinical Research of the University of Debrecen. Four hundred and fifty-four volunteers (aged 14-90 years, mean 35.7 year) underwent organoleptic testing by a trained dentist and volatile sulphur compound (VSC) measurements by gas- chromatography. All had completed a standardised questionnaire to obtain information on their self-reported halitosis,

oral health behaviour and life style (oral hygiene, frequency of dental visits, smoking, alcohol use, and stress level). Data were statistically analysed using chi- square and t-tests, correlations were evaluated by Spearman rank correlation analysis. A p-value of less than 0.05 was taken as significant.

Results: 230 patients (52.2%) reported oral malodour according to the questionnaire. With organoleptic testing and gas-chromatography this figure was 57.5% (261) and 51% (231), respectively. We found significant correlation between organoleptically measured halitosis and VSC levels ($p=0.001$), but we couldn't find significant correlation between self-reported halitosis and organoleptic scores. In smoking, alcohol consumption and oral hygiene practices we found significant gender differences. Organoleptic testing found higher halitosis levels in males ($p=0.034$). The prevalence of halitosis increased with age. Significant correlations were found between organoleptic scores and smoking, alcohol consumption, dental visit frequency, stress level and mouth rinse use. It was found that self-reported halitosis had statistically significant correlation with tooth brushing frequency, mouth rinse and dental floss use, stress level and dry mouth problem.

Conclusions: Bad breath is a significant, but underestimated problem in Hungary, its prevalence is greater than in other European countries. A direct correlation exists between oral hygiene practices and halitosis. Oral hygiene education should be provided on a population level to encourage the maintenance of oral health and fresh breath, but the formulation of an appropriate preventive strategy against oral malodor should be done individually.

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3320. OBESITY AMONG DENTAL STUDENTS AND THEIR ORAL HEALTH

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The aim of this study was to investigate obesity among dental students and their oral health status, and to determine any association between body weight and dental caries.

Method: 150 people from 4th and 5th grade students in the 2015-2016 academic year, Marmara University Faculty of Dentistry volunteered to participate in this cross-sectional study. Their oral examination and anthropometric measurements (weight, height, waistline) were done by the same dentist. The volunteers eating, smoking, exercising and brushing habits were collected with a questionnaire. The study was approved by the Ethics Committee of Marmara University. Dental status was evaluated using decayed, missing or filled teeth (DMF-T). Body Mass Index (BMI) was calculated by dividing weight in kg by height squared (kg/m^2), and classified in four groups; underweight (<18.50), normal ($18.50-24.99$), overweight ($25.00-29.99$), and obese (≥ 30.00) according to WHO criteria. Males and females were evaluated according to waistline measurements (female; normal 80cm, increased risk 80-87, high risk ≥ 88 . Male; normal <94 , increased risk 94-101, high risk ≥ 102). Data obtained during the survey were stored in a database (SPSS) and tested for possible statistically differences using the Chi-square test, Anova variance analysis and Pearson correlation analysis. p value $<0,05$ was considered statistically significant.

Results: The students were 73(48.7%) male and 77(51.3%) female. The mean age of students was 24.1(22- 26). The mean DMF-T score was 5 (D:1.3, M:0.4, F:3.3), and 83(55.3%) students had a DMF-T score above 4. The high DMF-T scores were mainly filled teeth. 138(92%) of the students reported brushing their teeth once a day. Distribution of the students with underweight, normal weight, overweight and obese according to BMI was 10(6.7%), 110 (73.3%), 24(16%) and 6(4%) respectively. In addition, distribution of the students with normal, increased risk and high risk according to waistline measurements was 126(84%), 17 (11.3%) and 7(4.7%) respectively. As expected, BMI and anthropometric measurements were significantly different between males and females ($p<0.001$). The number of obese students in all groups was low. DMF-T was higher in the normal weight group than the obese group. The risk for dental caries was not found to be significantly associated with BMI or waistline measurements ($p>0.1$, $r=-0.026$, $r=-0.051$ respectively).

Conclusion: We conclude that there is no association between tooth decay and weight in dental students. We speculate that their intellectual levels were high enough to prevent and preserve their oral and general health.

3323. ORAL HEALTH AND USE OF DENTAL SERVICES AMONG ASYLUM SEEKERS AND IMMIGRANTS

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Recently, the number of asylum seekers and immigrants arriving in Finland as well as other European countries has explosively grown. Tens of millions people have been obliged to leave their home countries because of conflict and persecution. The aim of this pilot study was to investigate self-reported oral health, oral health habits and use of dental health care services among asylum seekers and immigrants in Finland.

Methods: All asylum seekers living in the Ruukki refugee reception center and immigrants studying at the Oulu Adult Education Centre and PSK-Adult Education Centre were asked to participate in the interview study carried out in Northern Finland, 2012. Participation was voluntary and by participation the respondents gave their consent. The study comprised 38 participants (18 males and 20 females) from 15 different countries. Nine of the participants were asylum seekers and 29 immigrants, the youngest being 17 and the oldest 53 years old (mean 31.6, SD 9.3). Each interview took approximately 30 minutes. The reported data was analyzed with SPSS Statistics 20.0 (IBM, Illinois, USA) and the differences between the groups were tested using Pearsons chi-square and Fishers exact tests.

Results: The participants reported high need for dental treatment, most often among the highly educated (90%, $n=9$) and among those with no education at all (89%, $n=8$). The asylum seekers (78%, $n=7$) reported more pain and other symptoms in the mouth than the immigrants (31%, $n=9$), $p=0.02$. The asylum seekers (100%, $n=9$) were significantly more unsatisfied with both access to dental treatment ($p=0.003$) and the quality of treatment ($p=0.001$) in Finland when compared to the immigrants (18%, $n=5$). The immigrants were more aware of good oral health habits than the asylum seekers. Brushing teeth at least twice a day was significantly more common among the immigrants than among the asylum seekers both in their home countries (immigrants 62%, $n=18$ /asylum seekers 11%, $n=1$; $p=0.019$) and in Finland (immigrants 79%, $n=23$ /asylum seekers 22%, $n=2$; $p=0.003$).

Conclusion: Despite the small number of participants, our interview-based study indicates that asylum seekers and immigrants have need for acute and basic dental treatment and health education.

SESSION 6

Other Dental Topics

3292. DENTAL TREATMENTS REDUCE RISK FOR DEVELOPING CARDIOVASCULAR DISEASES IN HYPERLIPIDAEMIC PATIENTS

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Patients with hyperlipidaemia are important because of the possible interplay between oral infectious lesions, odontogenic infection-related systemic microinflammation and hyperlipidaemia resulting in an elevated risk for cardiovascular disease (CVD).

Aim: The aim of this study was to evaluate changes in the serum C-Reactive Protein (CRP) levels and lipid parameters of patients with hyperlipidaemia in parallel with the improvements in oral health due to comprehensive dental treatment.

Methods: All forty four patients (age range 32 to 71) who attended the Internal Medicine Department of the Medical and Science Centre, University of Debrecen (MHSC UD), between March 2005 and April 2007 and who met the inclusion criteria were invited to take part in the study. Of these, twenty-eight patients with Fredrickson type IIa and IIb hyperlipidaemia, receiving lipid lowering therapy for at least 6 months, who consented to take part, underwent comprehensive dental and laboratory examinations. Serum hsCRP, lipid and lipoprotein concentrations were determined and sub- and supragingival microflora were characterised. Patients received comprehensive dental treatment at the beginning of the study. Oral health parameters and microflora were checked 3-months after completing dental treatment. Serum high sensitivity CRP (hsCRP) and lipid parameters were re-assessed 1-week and 3-months after treatment. Normal distribution was assessed by the Kolmogorov-Smirnov test. Changes in the variables during follow-up were evaluated by one-way ANOVA and mean values were compared by paired t-test. If parametric approaches could not be applied, the Friedman test, Wilcoxon test and/or Mann-Whitney test were used. To evaluate the effects of confounding variables stepwise linear regression analysis was applied. Ethics approval was given by the ethics committee of the MHSC UD.

Results: No clinically relevant changes were observed at 1-week follow-up. At 3-months, periodontal indicators, including plaque indices, gingival indices and periodontal probing depths, improved significantly. There was a significant shift from a predominantly Gram-negative microflora detected on admission to a Gram-positive microflora following therapy, accompanied by a significant reduction in serum hsCRP and total cholesterol concentrations. Male patients and patients receiving non-surgical dental treatments experienced a significant high density lipoprotein C (HDL-C) increase. **Conclusions:** Results of this study suggest that, in the group studied, improvements in oral health by comprehensive dental treatment were associated with decreases in serum hsCRP and improvements in lipid profile, exposing patients with hyperlipidaemia to a decreased CVD risk, representing an effective adjunct to lipid lowering therapy and preventive cardiology and hence an effective public health intervention.

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3307. ORAL MANIFESTATIONS OF HIV INFECTION: A STUDY IN A FRENCH HOSPITAL

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Background: HIV infected patients may present with oral problems related to immunosuppression, smoking, alcohol, drugs or poor oral hygiene. Antiretroviral drugs used to effectively treat HIV infection mean that morbidity and mortality from opportunistic infections have significantly decreased.

Aims: This observational study was conducted on the oral status of HIV infected patients, treated in hospital day care (ethics committee NÂ° 11-039). We compared the prevalence of oral pathologies by disease stage and analysed oral manifestations according to CD4+ T-cell counts and oral hygiene. Chi-square tests were used and significance level was $p < 0.05$.

Results: 60 patients were enrolled during 10 months, 55% ($n = 33$) women (mean age: 44.3 years); 65% had no dental practitioner. CD4 T-cell counts fell below $200/\mu\text{L}$ in 10% ($n = 6$) patients. About 62% of patients had an undetectable viral load and 87% received triple therapy; around 44% of patients presented oral manifestations and 23.5% ($n = 14$) had a plaque index $> 50\%$. There were no significant correlation between oral lesions and disease stages ($p=0.58$), or CD4 T-cell counts ($p=0.92$). However, oral lesions were strongly correlated with poor hygiene ($p < 0.001$). Discussion: Many publications highlight the decrease of oral lesions in triple therapy patients. These are often seen in patients without medical follow up or with discontinuous care, typically with insecure situations and social isolation. They are often rejected by private practitioners, hospital being their last option. Prescription of antiretroviral drugs and treatment of opportunistic infections could explain the lack of correlation between HIV infection and oral pathologies. **Conclusion:** These results show that regular medical and dental follow up leads to a decrease in the incidence of HIV oral manifestations. The positive assessment of this hospital study encouraged us to create a systematic dental consultation for HIV infected patients. So, care could continue, especially in underserved and isolated people.

3318. HOPE IN BREAKING BAD NEWS: A SYSTEMATIC LITERATURE REVIEW

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This systematic review aimed to understanding existing knowledge of hope in disclosing bad news in advanced cancer care. What conceptual and empirical research has been conducted? Does preserving hope matter to doctors and patients? Are there optimal forms of communication?

Method: The systematic review used Cochrane, Pubmed, Scopus, SocIndex and Web of Science in August, 2015. A second reviewer independently screened 20% of the sample. Disagreement over inclusion was solved through discussion. Studies were divided into three groups. 1) Hope and factors relevant to the process of preserving hope. 2) Problems encountered by doctors and patients in the communication of bad news in relation to hope. 3) Problems during breaking bad news.

Results: Exploring patient's goals and perceptions of disease is necessary for doctors to shape their communication. Opportunity to decide how much information they want enables them to practice autonomy while relieving the doctor's sense of responsibility for making decisions. How patient can be expected to practice autonomy and have realistic expectations and hope if not fully aware of the nature of the disease. The discontinuation of anti-cancer treatment or referral to palliative care can cause confusion for advanced cancer care patients, as it has been traditionally associated with death, and thus with a complete loss of hope.

Conclusion: Numerous tools that doctors should use in order to foster hope: 1) Softening, sweetening information and giving hopeful information, 2) Showing care was important especially when no further treatment was available.

3) Acknowledge fear enables patients to feel more able to talk about their concerns. 4) Being open to alternative treatments was valued as it demonstrated that their care provider did not give up on them. 5) Tools for demonstration such as diagrams, pictures, and credible websites was identified as helpful in order to understand information regarding the disease. Supportive relationships such as family were another key factor that played a vital role in preserving hope. Lack of time is frequently mentioned as an obstacle to effective doctor patient communications. Reducing the workload was suggested by doctors as a way of spending more time with and giving more support to patients.

Methods of funding: University of Lucerne, Switzerland

3321. EBOLA VIRUS DISEASE: AWARENESS AMONG DENTAL STUDENTS IN HUNGARY

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The Ebola (EVD) epidemic has claimed thousands of lives in Africa. Dentists may contact infected patients for the first time. The aim of this study was to assess the level of knowledge of EVD among dental students at the Semmelweis University, Budapest and in Hungary.

Method: A cross-sectional study of a convenience sample of 257 dental students (fourth and fifth year of the Dental Faculty of Budapest, and about half of the fourth and fifth year dental student population of Hungary) in May 2015 across five different courses: fifth-year Hungarian students (n=78), fifth-year English language students (n=27), fifth-year German language students (n=13) and fourth-year Hungarian students (n=85). Fourth-year English language course students (n=26) and fourth-year German language course students (n=28) formed one fourth year foreign language group (n=54). All the students were asked to fill out a detailed questionnaire of 11 questions about the signs and symptoms, investigations, management, and sequelae of the virus and the outbreak.

Results: 257 dental students completed the questionnaire; 118 by fifth-year- and the remaining 139 by fourth-year dental students. All of the submitted questionnaires were included in the analysis. Students of the fourth year Hungarian course achieved the highest overall score of 17.9 for all the questions, followed by the fifth year German course with an overall score of 14.8, which was significantly less compared with the fourth year Hungarian group ($p < 0.0001$, Student's t-test). The fifth year Hungarian course with a score of 13.7 was not statistically different from the fifth year Germans while the fourth year foreign language score of 11 was significantly lower compared to all the groups. Fifth year English course participants achieved the lowest overall score, gaining 10.2 of the attainable marks. Students scored less than 60% for 8 of the 11 questions, including recognition and subsequent management of EVD.

Conclusions: Our study showed that there is a general shortage of knowledge about important aspects of EVD among dental students, especially amongst English speaking fifth year students. These results suggest that dental schools need to act to better prepare students.

3327. ORAL HEALTH MAY AFFECT THE PERFORMANCE OF MRNA-BASED SALIVA BIOMARKERS FOR OSCC

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Aim(s): Oral squamous cell carcinoma (OSCC) has a dismal 50% five-year survival rate, emphasizing the need to develop reliable and sensitive tools for early diagnosis. The aim of this study was to evaluate the performance of 7 previously identified, potential mRNA biomarkers of OSCC in saliva samples of Hungarian patients.

Methods: Thirty one consecutive patients with recently diagnosed and untreated OSCC were recruited from the Department of Oral Surgery (Faculty of Dentistry, University of Debrecen, Hungary), between June 2011 and May 2012. Thirty age- and gender-matched subjects, and 29 young healthy subjects, consecutively admitted for dental check-up at the Department of Restorative Dentistry and Department of Periodontology (Faculty of Dentistry, University of Debrecen, Hungary), represented the control groups. Exclusion criteria were: a prior history of cancer, coexisting diabetes, autoimmune disorder or contagious diseases. RNA was isolated and reverse transcribed from filtered saliva samples. Expression of the putative OSCC biomarkers (DUSP1, OAZ1, H3F3A, IL1B, IL8, SAT and S100P), 2 biomarkers of inflammation (IL6 and TNF α) and 8 putative normalizing genes were quantified from each sample using real-time quantitative PCR. The study was approved by the Ethics Committee of the University of Debrecen. The study participants were all invited, and gave their written, informed consent. Detailed characteristics of OSCC patients and controls are summarised in a poster.

Results: In contrast with previous studies, the expression pattern of the 7 mRNA biomarkers was similar between OSCC patients and age-matched control patients in the Hungarian patient population. On the other hand, 5 of the 7 mRNA biomarkers were present at significantly higher levels in saliva samples of OSCC patients when compared to young control patients. The best biomarker combination could distinguish only the OSCC vs. young control patients, but not the OSCC vs. age-matched control patients.

Conclusion: The significant differences between our results and previous studies, and the clinical characteristics of the patients suggest that inflammatory processes in the oral cavity may affect the performance of the 7 putative salivary mRNA biomarkers. Since IL6 mRNA was quantifiable in the majority of OSCC cases, but only in a few control samples, salivary IL6 mRNA may be utilized as part of a biomarker combination to detect OSCC.

Acknowledgement: The research was supported by OTKA K 105034. Head of research: Professor Ildikó Márton

3328. ANXIETY AND PERSONALITY IN DENTAL PRACTICE

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Aims: Dental anxiety as a barrier in dental practice impacts on dental attendance patterns and respectively on dental health. Observation on age-specific characteristics, personality types and dental anxiety of dental patients gives the opportunity for patient behavior to be more comprehensively studied, as dentist-patient communication is improved. The aim of the present study was to investigate the correlation of anxiety-personality and the impact of personality type and dental anxiety on dental attendance patterns.

Methods: In 2015 a total of 250 questionnaires were distributed (response rate 92.4%, n=231) among randomly selected male and female patients in six dental surgeries, who were divided into 4 age groups according to Havighusts age classification (18-29: n=41 (17.7%); 30-39:n=65 (28.1%); 40-59: n= 87 (37.7%) and over 60 years old : n=38 (16.4%)) administered questionnaires consisting of Eysencks Personality Test, Corah Dental anxiety Scale and an item about attendance patterns. The study included only those participants who gave informed consent. Descriptive test, statistical analysis and Pearsons correlation coefficient were used to search for statistically significant correlations. **Results:** 140 (61%) subjects showed low levels of dental anxiety, 65 (28%)-moderate DA, 14 (6%)-high DA and 12 (5%)-severe DA. The analysis showed a weak negative correlation between dental anxiety and extraversion ($p =$

-0.154) as dental anxiety and neuroticism ($p = -0.021$) among males. Female results for these two conditions showed a weak positive correlation, respectively $p = 0.086$ and $p = 0.236$. The analysis showed there was a moderate correlation between dental anxiety and attendance patterns in the age groups 18-29 and over 60. There was a sex difference in that dependency-weak positive correlation about males ($R = 0.160$) and significant positive correlation about females ($R = 0.438$).

Conclusion: The study showed that dental anxiety is a multi-dimensional phenomenon associated with age, sex and personality characteristics. Comprehensive knowledge of psychological aspects in dental practice can be helpful for both patient and dentist.

3330. ACCEPTABILITY OF TELEDENTISTRY BY DENTISTS IN THE SOUTH OF FRANCE

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Teledentistry is developing globally but it is essential to study the acceptability by all who are involved. The university hospital of Montpellier started an innovation of oral teleconsultation and we studied the acceptability of “e-DENT” by dentists. How the dentists perceive the “e-DENT” project? What influenced acceptability? Which clinical conditions would dentists use for the oral teleconsultation?

Methods: In January 2015, we used a qualitative study with 20 semi-directed interviews by phone to dentists in the Montpellier area. Consent was given to participate and to be recorded. We used a snowball technique of dentists who still practice. At the end of the interview each dentist was asked to give two contacts for the next stage. 12 dentists refused. Orthodontics, retired and hospital dentists were excluded. 4 hours, 42 minutes and 10 seconds were recorded and analysed with NVivo® software.

Results: The sample was composed by 40% (8) of female and 60% (12) of male. They work for 85% (17) in a big or medium city and 15% (3) in a rural area. 50% (10) were between 30 and 39 years old. Teleconsultation advantages: better organization for appointment for the dentists (decrease and hierarchical), less stress for the patient, more patients could be seen, economic aspect. Disadvantages: quality of the diagnosis, time-consuming, new task for dentists and nurses. The relationship between patient and dentist could change: better acceptability by patient, faster than a classical consultation but no more physical contact between patient and professional.

Conclusion: the oral teleconsultation seems to be accepted by French dentists. The more important fears about this new concept are the quality of the diagnosis and the payment for the telediagnostic system. The responsibility is also a question. The dentists think that it's a good tool for equality of access in dental care and it could be very useful for specific populations such as elderly people or disabled people.

3335. THE DIAGNOSTIC ROLE OF OPTICAL COHERENCE TOMOGRAPHY (OCT) IN THE CHRONIC DISEASES OF THE SOFT AND HARD TISSUES OF THE ORAL CAVITY

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Optical coherence tomography (OCT) is a novel, non-invasive imaging modality, applied in everyday practice in ophthalmology. It enables cross-sectional real-time imaging of different tissue microstructures in situ. The optical biopsy, provided by OCT gives further microstructural information about oral soft and hard tissues and different deposits adhered to these surfaces. The aim of this study was to evaluate the diagnostic value of OCT for chronic diseases of soft and hard tissues of the oral cavity. Microfractures of dental tissues and biofilm developed on soft and hard tissues of the oral cavity were examined.

Methods: The study took place in the Departments of Restorative Dentistry and Ophthalmology at the University of Debrecen between December 2015 and April 2016. It was approved by the University of Debrecen ethics committee and all patients who took part gave their written consent. Forty two examinations were performed on 14 patients, with 3 types of OCT devices on oral soft and hard tissues. OCT devices utilize the different ability of biological tissues to absorb and reflect light. Biofilm which adhered to dental surfaces and gingiva was examined with Time- Domain (TD) OCT (Zeiss Stratus OCT, Karl Zeiss Meditec). Heidelberg Spectralis Spectral- Domain (SD) OCT was used for the microstructural examination of dental hard tissues. Visante (Carl Zeiss Meditec) OCT was used for the evaluation of the presence and structure of biofilm in vivo. Four Adults with intact teeth were included as control.

Results: The presence of surface biofilm was detected in every case as being between 25µm and 55µm thickness by TD-OCT. Different structural properties were detected as irregular, thin-continuous and thick biofilm layers. The near-infrared wavelength of light used in SD- OCT verified dental micro-fractures between 15 µm- 95µm in width. The presence and varying amount of biofilm were also detected with Visante (Carl Zeiss Meditec) OCT.

Conclusion: The OCT imaging technique provided excellent resolution (5µm). In the biofilm microorganisms were present in an extracellular matrix layer made of polysaccharides, proteins and nucleic acid, which was produced by microbes. In this layer bacteria can exist in a safe environment. The antibiotic resistance is thousand times higher than in planktonic form. The authors consider the technique suitable for the evaluation of microstructural properties of biofilm on oral soft and hard tissues. Using OCT it is possible to gain new information about oral pathological conditions and microstructural changes.

The authors report no conflict of interest related to this study.

3346. ANTIFUNGAL EFFECTS OF ORAL HYGIENIC PRODUCTS ON IN-VITRO BIOFILMS

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Aim: The objective of the present study was to assess the preventive and therapeutic efficacy of Cervitec Plus against four *Candida* species grown on acrylic surfaces. Oral candidiasis is a common opportunistic infection due to fungal adherence to acrylic surfaces. Denture wearing patients have increased risk to candidal infection. Chlorhexidine containing antimicrobials are important for prevention and treatment of oral candidal infections.

Methods: The preventive and therapeutic antifungal effect of Cervitec Plus varnish compared with chlorhexidine mouth rinse was examined on artificial biofilm of *Candida albicans*, *Candida parapsilosis*, *Candida tropicalis* and *Candida glabrata*. Nystatin was used as a positive control and Cervitec placebo varnish and sterile saline solution as negative controls. Phase one investigated the therapeutic effect and phase 2 the preventive effects of these agents. *Candida* biofilms were grown in Sabouraud liquid medium, after being treated by the antifungals and controls. In phase 2 the agents were applied to the wells of the plates and the artificial biofilms were then grown. To determine the metabolic activity of biofilms XTT-assay were used. The tests were performed in triplicate.

Results: In the therapeutic phase (1), Cervitec Plus varnish did not reduce the CFU of the *Candida* species more than the generally used antimicrobials. The most effective therapeutic agent was Chlorhexidine, followed by Nystatin and Cervitec Plus. In phase 2 the most effective preventive agent against *Candida albicans* and *Candida parapsilosis*

was the Nystatine and Cervitec Plus, followed by Chlorhexidene. In the case of *Candida tropicalis* and *glabrata*, the Nystatin was more effective, compared to Cervitec Plus and Chlorhexidene.

Discussion: According to our findings, the therapeutic efficacy of Cervitec Plus is no greater than the other studied agents. A preventive effect of Cervitec Plus against *Candida albicans* and *Candida parapsilosis* was shown. Because of side-effects of Nystatin, Cervitec Plus may be considered an alternative preventive agent against *Candida* species. Further study is required to investigate the long-term anti-candidal effect of Cervitec.

3379. LASER DOPPLER FLOWMETRY OF ORAL STRUCTURES: CAPABILITIES AND LIMITATIONS

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Preserving oral health is a crucially important area of medicine. One of the numerous functions of the oral cavity is that it serves as a first line of defence, forming a barrier between the internal and the external environment. Thus, an appropriate function of oral tissues is a pre-requisite for the healthy function of the entire organism. For the appropriate function of organs and tissues, a good supply of nutrients and oxygen is necessary. This is provided by the blood supply, and therefore knowledge of the microcirculation of particular organs is necessary for a proper understanding of their function. The first indicator of an injury is the change in microcirculation. Blood flow is regulated by local and systemic mechanisms. Vasoregulatory substances - three different small molecules (nitric oxide (NO), carbide monoxide (CO) and hydrogen sulfide (H₂S)) are known to be endogenous gaseous mediators in the circulation - have a key role in local regulatory mechanisms.

Aims: To investigate the effects of gaseous mediators CO and H₂S on the submandibular gland (SMG) and gingival (GIN) microcirculation in rats.

Methods: Gingival circulation and microvessel function can be studied using different methods. A non-invasive technique to study tissue blood flow is laser Doppler flowmetry (LDF), a sensitive, reproducible and harmless method that is widely used today. LDF can be used both in human studies and on experimental animals. Blood flow (BF) was measured by laser Doppler flowmetry on the exposed surface of right SMG and on the upper central papilla. BF changes were calculated as percentage of the baseline. In the first series of experiments a HO inhibitor (zinc deuteroporphyrin 2,4-bis glycol, ip. 45mM/kg) was given. In the second local dripping of 50mM H₂S donor sodium hydrosulfide (NaHS) was applied directly on the SMG and GIN. The study was approved by the Animal Ethics Committee of Semmelweis University.

Results: The HO inhibitor did not change the SMG BF (89±3% of baseline, NS), but significantly decreased the GIN BF (56±10% of baseline, $p<0.05$). NaHS application significantly increased SMG BF (214±26% of baseline, $p<0.001$), but did not change GIN BF (110±7% of baseline, NS).

Conclusion: These data clearly indicate that endogenous H₂S is involved in the adequate maintenance of basal submandibular perfusion, but not in gingival blood flow. On the contrary endogenous CO is a vasodilator in the gingiva, but not in the submandibular gland.

Methods of funding: Support: OTKA K112364

Session 1b

Oral Epidemiology

3306. DIFFERENCES BETWEEN 12-YEAR-OLDS DENTAL STATUS IN URBAN AND RURAL EAST MACEDONIA

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Inequalities exist in oral health service, access, oral health knowledge, practices and prevalence of oral diseases. Rural areas are often associated with lower education levels, people are poorer, less health-literate, have more caries, have fewer teeth and have less money to spend on dental care compared to people living in urban areas.

Aim: To identify differences in dental status and knowledge about sealants between rural and urban 12-year-olds in East Macedonia in order to evaluate the National preventive program (2007- 2014).

Method: Cross sectional surveys used cluster sampling and recorded DMFT. A total of 328 children aged 12-year-old were examined in 2007 and 313 in 2014, of both sexes from state schools across 3 regions in East Macedonia. Both urban and rural areas with contrasting socio-economic groups participated in the study. A calibrated dental team clinically examined and personally interviewed all the subjects in line with WHO recommendations. The sample was examined using standard dental diagnostic equipment (plane dental mirror, dental probe) under artificial light on dry teeth in a dental chair. Results were analysed by means of descriptive statistics. Ethical approval for the study was part of the National preventive program.

Results: In urban 12-year-olds the 2007 DMFT was 4.27, while in rural areas it was 4.41. By 2014, in urban areas DMFT was 1.89, and in rural areas 1.65. More urban children knew about fissure sealing 95 (61.8%) and the appropriate time for sealing 96 (62.3%), than their rural counterparts, 77/83 (48.4% /52.2%).

Conclusion: There is an apparent trend of decreasing DMFT following implementation of the National prevention program. Also, there are no significant differences between DMFT among children from urban and rural areas because of equal implementation of the preventive measures from the National program throughout Macedonia. However, intensive application of preventive measures is still needed so that there is even further improvement in oral health among 12-year-olds in East Macedonia.

The authors wish to thank Coordinative Body for implementing and monitoring of National preventive program for children in The Republic of Macedonia, for assistance in determining the analytic strategy and helpful comments.

3331. ASSOCIATIONS BETWEEN DENTAL CARIES AND BMI AMONG 5-9 YEAR OLD BANGLADESHI CHILDREN

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Dental caries is the most common childhood disease worldwide. Findings from different studies provide inconsistency in association between dental caries and height, weight and BMI in young children. The aim of this study is to assess the associations between dental caries and Height, weight and BMI among 5 to 9 year old Bangladeshi children.

Methods: A cross sectional observational study was conducted in August to October 2015 among 5-9 year old children in Dhaka City of Bangladesh. The University College London and National Research Ethics committee approved the study and parental consent was obtained for each subject. Children were randomly recruited from those coming for dental treatment in Dhaka Dental College Hospital and from three nearby primary schools. Both clinical and non-clinical data were collected. Clinical data was collected from the children and non-clinical data was collected from both parents and children through questionnaires. Clinical dental data was collected through a dental examination, using standard WHO Oral Health Survey Basic Methods, 2013; by trained and calibrated dentists. Height and weight of the children were also measured and converted to Z-scores, namely weight-for-age (WAZ), height-for-age (HAZ) and BMI-for-age (BAZ) Z scores and these were outcome variables. A combined measure of decayed, missing and filled deciduous and permanent tooth (dmft+DMFT) was used as the main exposure for the final analysis. Data was analysed by using Stata version 13.0. First the analysis for bi variable association was conducted and finally multiple linear regression analysis was used in order to assess the associations of interest adjusted for possible confounding factors: age, sex, parental education, occupation and house hold family income.

Results: total sample size was 788 children. Among them 388 (49.2%) were boys and 400 (50.7%) were girls. The children were 5-9 year old and majority (86.8%) was within 6-8 years. The mean age was 7.12 years (95% CI 7.05- 7.19). The mean dmft+DMFT in the study population were 2.8 (95% CI 2.6-3.0). Children with a higher level of caries experience had statistically significant lower HAZ, WAZ and BAZ scores than those with lower caries and with no dental caries group. The result of multiple linear regressions showed that with each number increase of dental caries there were 0.1 Z score decrease in HAZ, WAZ and BAZ after adjusting for other factors ($p < 0.001$). The result of this study provides evidence that dental caries was associated with lower height, weight and BMI of children in Bangladesh.

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3345. DENTAL EROSION AMONG 12 YEAR-OLD HUNGARIAN SCHOOLCHILDREN

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Dental erosion seems to be a growing problem with more erosive lesions on permanent teeth among schoolchildren (Lussi 2006.) Early identification of erosion allows prevention for at-risk patients. No national erosion examinations have been carried out in Hungary in children. WHO pathfinder surveys were undertaken regularly in 12 year olds. The aim of the present study was find the prevalence, severity of dental erosion and to identify associated risk factors among 12 year old schoolchildren in Hungary.

Methods: This cross-sectional survey was carried out with the pathfinder examinations at 14 different urban and rural areas in 2012. Stratified sampling was used, the children included were representative of Hungarian children. There were different number of children in the different geographic areas. The full sample frame was 644 children, there were 28 refusals, 15 drop outs absent children, and 22 children were excluded if the child was over 13 years or under the age of 12 years, or with fix orthodontic appliance. Ethical approval, parental consent and the Hungarian Chief Medical Officer gave permission for the survey. A total of 579 randomly selected children (287 boys, 292 girls) were clinically examined in school dental offices by one trained examiner. Only the first permanent molars and incisors were included. The Basic Erosive Wear Examination (BEWE) scoring system (Bartlett et al. 2008) was used to record erosion. A self-administered questionnaire was used to evaluate oral hygiene and nutritional habits, the amount and frequency of foods and drinks consumed, and the mothers educational level. The data were analysed using SPSS version 17 and Pearsons Chi-Square Test.

Results: The mean age of the children was 12.6 years. 123 children (21.2%) showed signs of erosion. There was no statistically significant difference between genders; 60 boys (20.9%) and 63 girls (21.6%) were affected. The highest percentage of mild erosion was found on the occlusal surfaces of the mandibular first molars, followed by the upper incisors and molars. No dentinal erosion was found. The mean BEWE score was 0.39. When the incisal edges of the front teeth were included, the prevalence was 62.9 % (364 children) and the BEWE score was (1.21). There were considerable differences in erosion prevalence and level between geographic locations and location types. There was a strong correlation ($p < 0.01$) between erosion and daily consumption of erosive drinks. The BEWE score was higher in children whose mothers reported lower education ($p < 0.00$).

Conclusions: The prevalence of erosion in Hungary was not as high compared to some European studies. Severity level was low and only enamel erosion was found. A strong association between erosion and acidic drinks intake was documented, similar to many researchers. The correlation was high regarding mothers education level. The cumulative BEWE scores matched to risk level and may provide a guide towards preventive and other clinical management. The present national erosion data indicate that more attention must be given for risk children and also for risk areas. Our results are good tool / basis for later examinations to follow measure and compare the erosion condition in adolescents.

Methods of funding: Supported by GABA International, now Colgate-Palmolive Europe.

3347. THREE YEAR RESULTS OF ECC PREVENTION IN CHILDREN WITH STREPTOCOCCUS MUTANS IN SALIVA

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The aim of this study was to estimate the effectiveness of antimicrobial (chlorhexidine) and remineralising agents (fluoride varnish) applications for early childhood caries prevention in children with *Streptococcus mutans* (SM) in saliva.

Methods: The study was conducted in the Belarusian State Medical University dental school. A total of 295 children up to 3 years old (average age 15.2 months) were examined by one dentist to assess quantitative salivary levels of SM, dental caries using d1-4mft index and oral hygiene practices (index of E.Kuzmina, 2000). Children with SM CFU >10³ (n=134) were randomized in group 1 (n=52) with applications of “Cervitec” varnish (chlorhexidine) 4 times a year, group 2 (n=51) with applications of “Cervitec” varnish 2 times a year and 5% fluoride varnish applications 2 times a year and control group 3 (n=31) with semi-annual dental visits. The dentist who recorded dmft was blind to the treatment groups. The results were analyzed statistically (Wilcoxon test, Mann-Whitney U test, Spearman correlation analysis). Regional Ethics Committee approval and parental informed consents were obtained.

Results: There were no statistically significant proportional differences regarding age, gender or number of erupted teeth between the groups. At baseline the dental caries prevalence was 67.3% (n=35) in group 1, 64.7% (n=33) in group 2 and 67.7% (n=21) in group 3. Index d1-4mft was 3.23 (2.90), 3.18 (2.82) and 3.32 (3.41) accordingly (p1-3=0.88; p2-3=0.86). Oral hygiene index was 0.44 (0.26), 0.39 (0.26) and 0.43 (0.27) (p1-3=0.39; p2-3=0.76). The SM salivary level was 1.69 (0.61), 1.57 (0.64) and 1.74 (0.58) accordingly (p1-3=0.67; p2-3=0.21). After 3 years the increase in dental caries in group 1 was 2.04, in group 2 – 1.35 and in group 3 – 3.30 (p1-3=0.12; p2-3=0.001). Dental caries reduction was 38.2% in group 1 and 59.1% in group 2. The correlation between dental caries prevalence and oral hygiene index in each group was ($\rho=0.66$, $\rho=0.46$ and $\rho=0.45$; $p<0.001$). There was no significant effect of 4 “Cervitec” varnish applications on dental caries increment.

Conclusion: the antimicrobial and fluoride varnish should be used together for ECC prevention in children with SM in saliva.

Methods of funding: Belarusian State Medical University.

3362. ORAL HEALTH PRACTICES OF FIRST GRADE LYCÉE STUDENTS: A SAMPLE FROM TURKEY

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There are few studies related to the oral health practices of first grade lycée students (14-year-olds) in Turkey.

Aim: This study aimed to evaluate the oral health practices of first grade lycée students from a predominantly middle to lower socio-economic district of Ankara.

Methods: The oral health practices of 14-years-olds from nine lycées were investigated along with their general health status and that of their parents and teachers. Ethics approval was obtained from Non-Interventional Clinical Researches Ethics Board of Hacettepe University. Permission for the study was obtained from the Educational Directorate of the province. Parental informed consent was also obtained. Participation was voluntary. All 1,667 students who were 14-years-old, their parents and 424 teachers were invited to take part. Data were collected from students via a structured, pre-tested, self-administered questionnaire, and analyzed by using SPSS 21.0. The relation between variables were evaluated by Chi-square test and a p value <0.05 set for statistical significance.

Results: For various reasons 1,177 (70.6%) participated the study. Of the participants, 647 (55.0%) were male (mean age 14,29±0,5 years). Only 262 (24.2%) of mothers had lycée or a higher education and 220 (20.4%) were currently working; these figures for fathers were 465 (43.7%) and 897 (92.6%) respectively. Of the responding families, 534 (48.8%) reported that they had a moderate socio-economic status. Five hundred (98.4%) female students and 567 (94.7%) male students reported that they had their own toothbrush (p=0.001). For frequency of tooth brushing, 32 (3%) said they never brushed their teeth and 486 (45.2%) at least twice a day. Almost all of the students who were brushing their teeth were using tooth paste and most of them said they renewed their tooth brush every six months or more frequently. There was no significant difference between genders with regard to never visiting a dentist, which was the answer from 242 (20.6%) of students. However, only 366 (43.8%) provided details of their last dental visit. Among these students, the most frequent cause for last visit was pain 115 (31.4%), and half of them had their last dental

visit less than one year previously. Almost all of those who responded to this question 327 (90.2%) stated they visited the dentist whenever they had an oral complaint.

Conclusions: The frequency of dental visits and tooth brushing at least twice a day were worse than those reported in developed countries. To improve this situation, schools offer a good location to provide oral health education. The training related to oral health should begin from preschool age and should continue to the end of secondary education. Parental participation as well as that of dental professionals would increase the awareness of this issue.

Source of funding of this study was provided jointly by researchers, The district directorate of national education, and Community health centers.

3363. PUFA INDEX RESULTS OF UNTREATED DENTAL CARIES AMONG 3-6 YEAR OLDS, TURKEY

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The aim of this study was to determine the consequences of untreated dental caries in relation to some characteristics of 3-6 year-old children using the pufo index.

Methods: The data were obtained from a study in which the oral health, nutritional status, and anthropometric measurements of the preschool aged children were surveyed. Ethics approval for the study was obtained from the Hacettepe University Non-Interventional Clinical Researches Ethics Board. Permission was obtained from the parents of the children involved and from the relevant educational authorities. The target population was all preschool children, aged 36 - 71 months (n=1019) in a district of Ankara. However, due to some parents not giving consent and the absence of some children from school, 729 children participated in the study. A trained resident from the Paediatric Dentistry Department of Hacettepe University Faculty of Dentistry performed the oral examinations of the children. Intra-examiner variability was checked (Kappa value was 88%, p<0,001). The pufo index was used for evaluating the clinical oral mucosal consequences of untreated dental caries. Pulpal involvement (p), ulceration because of the dislocated tooth fragments (u), fistula existence (f), and abscess formation (a) were recorded. The data were analysed by using SPSS 16.0 programme. **Results:** Of the children, 12.9% (n=94) had pufo symptoms. The highest pufo score for one child was 6. The primary mandibular left second molar was the tooth most commonly found to have pulpal involvement (p). The primary maxillary right central incisor was the tooth most commonly to have a fistula (f). Having a pufo score of at least one was statistically significantly more likely in males (15.8%, n=64, p= 0.008) than females, and in children aged 60-71 months (17.7%, n= 69, p<0.001) than 36-47 and 48-59 months. Higher pufo scores were seen in children whose mothers and fathers had a lower educational level than Lycee (secondary education) (16.9%, n=50, p=0.010 for fathers and 17.7%, n=46, p=0.001 for mothers) and in children whose mothers had self-assessed untreated caries (17.7%, n=56, p=0.001), who were of middle- and low socio-economical status (14.7%, n=79, p=0.013) were found to be significantly related to pufo experience.

Conclusions: In the group of 3-6-year-olds studied, a surprisingly high proportion of children with untreated dental caries had pufa symptoms. It is necessary to highlight the need for preventive dentistry and dental caries management in the primary dentition.

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3392. SOCIOECONOMIC INEQUALITIES IN ORAL HEALTH ASPECTS IN PRIMARY SCHOOL CHILDREN

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Oral health inequality in children is a widespread and well-documented problem in oral health care. However, objective and reliable methods to determine these inequalities in all oral health aspects, including both dental attendance and oral health, are rather scarce.

Aims: to explore oral health inequalities and to assess the impact of socio-economic factors on oral health, oral health behaviour and dental compliance of primary schoolchildren.

Methods: Data collection was executed in 2014 within a sample of 2,216 children in 105 primary schools in Flanders, by means of an oral examination and a validated questionnaire. Intermutual Agency database was consulted to objectively determine individuals social state and frequency of utilization of oral health care services. Underprivileged children were compared to more fortunate children for their mean DMFt, DMFs, Plaque index, Care Index (CI), Restorative Index (RI), Treatment Index (TI), knowledge and attitude. Differences in proportions for dichotomous variables (RI100%, TI100% and being a regular dental attender) were analysed. The present study was approved by the Ethics Committee of the University Hospital Ghent (2010/061). All parents signed an informed consent form prior to data collection. All schools received information about the study protocol and agreed to participate. Children requiring dental treatment or periodic recall were referred to the local dentist.

Results: Underprivileged children showed worse outcomes for all explanatory variables ($p < 0.05$). In the low-income group, 78.4% was caries free, compared to 88.4% for the other children. Half of the low-income children could be considered as regular dental attenders, whereas 12.6% did not have any dental visit during a five year period.

Conclusion: Oral health, oral hygiene, oral health care level and dental attendance patterns are strongly negatively affected by childrens social class, leading to oral health inequalities in Belgian primary school children.

Methods of funding: The research presented in this report is part of the Glimlachen.be project (www.glimlachen.be), commissioned and financed by the Insurance Committee for Health Care of the Belgian National Institute for Health and Disability Insurance. The authors thank the Flemish Dental Association (VVT), the dentist examiners and all contributors.

3401. CARIES PREVALENCE AMONG PRESCHOOL AND SCHOOLCHILDREN OF INTERNATIONAL SCHOOL OF PRISHTINA

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Aims: To investigate the prevalence of dental caries and treatment needs in preschool and school children attending the International school of Prishtina (ISP). This is private school and children who attend ISP have parents with high income.

Methods: Dental examinations based on the World Health Organization (2013) criteria were performed in October 2015 on all 408 children aged 3 to 15 years old who attended the school. Permission to examine the children was given by the school authorities. The examinations were performed at the Marigona dental clinic, which is directly opposite the school, by one of three examiners, who had calibrated and achieved a Kappa score of 0.89. The teeth were clinically examined with standard dental instruments using visual-tactile method under standard dental light. The DMFT and dmft indices were recorded as well as the significant caries index (SiC).

Results: Amongst the 58 children, with deciduous teeth only, the mean dmft was 3.7. Among the 210 mixed dentition children, the mean DMFT was 1.3 and the mean dmft was 4.0. Among the 140 children who only had permanent teeth, the mean DMFT was 3.7. The mean DMFT for international students was 1.3 and mean dmft 2.1. The highest mean DMFT (4.8) was found in children aged 12-15-years-old.

Conclusion: The results show high prevalence of caries among preschool and school children of the ISP.

3407. STUDY ON THE STATISTICAL INDEX OF DECAYED, MISSED AND FILLED TEETH (DMFT) IN SECONDARY SCHOOL STUDENTS OF ZARAND CITY IN 2011

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Knowledge of the prevalence of oral diseases, including dental caries, is essential to plan for prevention and treatment prevent of these diseases.

Aim: This study aimed to evaluate DMFT in 12- years-old students from all 12 secondary schools in Zarand City, Iran in 2011.

Methods: It was a cross-sectional study performed using interview, examination and questionnaire. Cluster sampling was used among a sample of 350 12- year- old students. One examiner carried out the study in the schools using WHO (1997) criteria and methods to assess periodontal condition, number of decayed, missed and filled teeth,

existing fluorosis, occlusion, and need for orthodontic and preventive treatment. The data were analyzed by SPSS software Version 17. Ethics approval for the study was given by the ethics committee of Kerman University of Medical Sciences.

Results: The mean of DMFT index was 2.03. It ranged from zero for 121 students (34.6%) to a maximum of 11 in two students. There was no significant difference in need for orthodontic treatment between different groups of DMFT. **Conclusion:** In terms of the WHO target for 12-year-olds, the DMFT index for the sample assessed in Zarand city was not acceptable as it did not meet WHO target for 12- year-olds. It was decided that it was necessary to perform a special program in the schools to try to improve the situation.

3421. BARRIERS TO ORAL HEALTH CARE FOR CHILDREN: A QUALITATIVE STUDY

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Despite overall improvements in oral health, a large number of children in the world are affected by dental caries; and the implementation of oral health promotion in some families remains a challenge. The aim of this study was to explore the perception of mothers regarding barriers of dental care for children.

Methods: The present study was a part of a multi-level qualitative research with a content analysis approach which was conducted in Tehran, Iran in 2015. Qualitative data were collected via 12 focus group discussions and semi- structured interviews for understanding the perception of school childrens mothers on the barriers of oral health care. Sampling was goal-based, and continued until data saturation was reached. The study population consisted of a representative sample of Iranian women (n=58) of diverse ages selected from different districts of the capital Tehran, who had a first grade primary school child. All mothers agreed to attend the study and answered all the questions. Data were analyzed using the conventional content analysis method in MAXQDA 10. The study was granted ethical approval by the Ethics Committee of Tehran University of Medical Sciences.

Results: Based on the findings of the study three key themes of oral health barriers, each with a number of sub- themes, were identified and categorised as: (1) Barriers at the organization level, (2) Barriers at the patient-provider relationship level, and (3) Barriers at the family level (children and parents). Informants reported cost, inconvenience, fear, and low access to dental services as the main barriers to providing oral health care for their children. Fear of dental procedures and cost of treatment, were the most reported barriers.

Conclusions: Understanding the barriers to oral health promotion is needed for improving oral health of children. This study highlighted the need for efforts focused on reducing parents and childrens fear of dentistry and avoiding giving child oral health care a low priority, due to the cost of dental care.

Session 2b

Oral Health Promotion

3329. CHILDSMILE DENTAL HEALTH SUPPORT WORKERS IMPACT ON CHILD DENTAL PARTICIPATION IN SCOTLAND

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Childsmile, a Scottish government funded national public health programme, aims to improve child oral health and reduce oral health inequality. Dental Health Support Workers (DHSWs) form one of the programme's targeted strategies; primarily aiming to facilitate parents to access dental services for their children in the early years.

Aim: This study measured the impact DHSWs had on child registration and attendance with dental practice, investigating whether this was similar across social groups.

Method: National level data from three administrative health datasets were linked, including: 1) Child Health assessments (September 2010-December 2012) (n=111,909); 2) Health Informatics Centre data on DHSW contact with (referred) families (September 2010 -September 2012) (n=18,392), and 3) Management Information and Dental Accounting System data on dental participation (registration and/or attendance) (September 2010-December 2013) (n=76,724). Analysis was undertaken through a secure research portal. Multivariable logistic regression models were used to analyse the effect of DHSW intervention on participation, and whether there was any modification of this effect according to area-based deprivation (using Scottish Index of Multiple Deprivation (SIMD) 2009). Survival analysis was used to analyse time to participation at dental practice. This study was NHS Privacy Advisory Committee (now the Public Benefit and Privacy Panel) approved.

Results: Preliminary results show that, across the whole population, 80.8% (n=14852/18392) of those who received a DHSW intervention participated at dental practice compared to 66.2% (n=61872/93517) who did not receive an intervention (OR=2.1, 95% CI [2.1 to 2.2], p<0.0001). This effect was slightly modified when stratified by area-based deprivation: In children living in the 20% most deprived areas of Scotland, participation was 77.6% (n=12417/20494) for those receiving the intervention vs. 60.6% (5908/7614) for those not. For those living in the 20% least deprived areas the figures were: 84.0% (1178/1403) vs. 69.8% (11607/16631), respectively (p for interaction=0.25). Survival analysis showed that the median age when a child first participated at dental practice was 9 months for those who received a DHSW intervention and 19 months for those who did not.

Conclusions: Participation rates at dental practice were higher for families who received the DHSW intervention, compared to those who did not, the effect only slightly stronger for those living in more deprived areas. Participation at dental practice was facilitated sooner for children receiving DHSW support. Ongoing work is addressing whether these benefits translate to a clinically important reduction in inequalities in oral health.

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3332. MEDICAL AND SOCIAL SUPPORT DURING SMOKING CESSATION IN HUNGARY

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Smoking is associated with poor oral health, including increased risk of leukoplakia, gum disease, and oral cancer. The aim of this study was to investigate the prevalence of smoking and preference for quitting, as well as to describe the role of health professionals in promoting smoking cessation.

Methods: The results presented in this abstract come from the second phase of a national survey, which took place between 2008 and 2013. It involved a nationally representative sample of households in 48 districts of Hungary. Details of the sampling technique used will be presented in the poster. A self-administered questionnaire was completed by 1,042 people aged ≥ 18 years. Descriptive statistics were used to evaluate smoking prevalence, quit attempts, and health professional efforts to support cessation (using SPSS v.23). The study protocol was approved by the Ethics Committee of the University of Szeged (No. 2431/2008). Informed written consent was obtained from study participants.

Results: The response rate was 70.4 % and 1013 of the completed questionnaires contained sufficient data to

analyse. Of the daily smokers (292; 28.8%), 124 (42.5%) were thinking of quitting, and 26 (8.9%) were ready to quit. For current smokers, reporting a recent quit attempt (n=243), the frequency of medical support was relatively low: 26 (10.7%) used medication (e.g., nicotine patch), and 48 (19.8%) received advice from a doctor, dentist, or other health care worker. Only two people attended a quit smoking group, while 138 (56.8%) were supported by family or friends. There were no differences in cessation support across socio- demographic parameters.

Conclusions: In the group studied the desire to quit smoking was high and the health professional support for quitting was underused. Dentists and other health professionals can support patients in their desire to quit, ultimately reducing the smoking prevalence and its adverse population health effects in Hungary.

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3339. TREATMENT OF CARIOUS PRIMARY MOLARS IN ANXIOUS CHILDREN WITH OZONE: A PILOT STUDY

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Aim: To study the results of treating carious lesions in primary molars with ozone in anxious children.

Methods: A pilot study was conducted in Volgograd Pediatric Dental Clinic No.2. The study was approved by the Regional Ethics Committee. Informed consent from parents was obtained. In twenty-six 17-51-month-old children (average age 46.2 month) 60 occlusion surfaces of 60 molars diagnosed with ICDAS-II score 3-4 were treated using two methods (a split-mouth design) by an experienced dentist. The conventional invasive method (drilling and filling with glass ionomer cement (GIC) was used in 30 molars (G1), the non-invasive method (gaseous ozone application for 6 seconds and sealing cavitated caries lesions with GIC without excavation of carious dentine) was used in 30 molars (G2). The children were anxious (using the Anxiety Rating Scale and an Uncooperative Behavior Rating Scale) and were judged by the referring dentist as non-treatable. Immediately after the treatment of each tooth a 5-point visual analog scale (VAS) was used to reveal children's evaluation of the treatment (0 = no discomfort for a child during treatment, 5 = significant discomfort). A chi-squared test was used to compare G1 and G2 results.

Results: Using the VAS, 2 of 30 (6.6%) cases in G1 and 28 of 30 (93.3%) cases in G2 were rated as no discomfort up to mild discomfort. Significant, unacceptable discomfort was recorded for 28 of 30 (93.4%) cases in G1 and 3 of 30 (10%) cases in G2 (Chi square, $p < 0.05$).

Conclusion: Treatment of carious primary molars with ozone is more comfortable for the anxious children as compared with the invasive technique.

Methods of funding: Volgograd Pediatric Dental Clinic No. 2.

3349. CLINICAL EFFICACY OF GLASS IONOMER FISSURE SEALING IN YOUNG CHILDREN WITH HIGH CARIES RISK

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The aim of this study was to evaluate and caries preventive effect of Glass Ionomer Cement (GIC) fissure sealants in primary teeth in young Minsk children with high caries risk.

Methods: The study was conducted in the university dental school. Regional Ethics Committee approval and parental informed consents were obtained. 83 children aged 1.5-2 years with any signs of dental caries who were referred to the dental clinic were examined by a trained dentist to assess dental status by d1-4mft index and oral hygiene status by the Ribeiro index (1999). After oral examination the children were randomly divided into two groups: preventive or test ($n=40$) and control ($n=43$). In the preventive (test) group 67 primary molars were sealed with GIC. In the control group there were 77 primary molars without any sign of dental caries. In both groups children brushed with fluoride dentifrice at home. The dynamics of caries status in children and sealant retention was evaluated in a 3-year follow-up survey. The results were analyzed statistically (Mann-Whitney U-test, Odds ratio and 95% confident intervals (CI), p -value).

Results: There were no statistically significant proportional differences regarding age (19.7 and 20.6 months; $p=0.81$), mean number of erupted teeth (16.6 and 15.5; $p=0.47$), mean d1-4mft value (5.8 (2.1) and 6.0 (2.5); $p=0.72$)

and oral hygiene status (3.6 (1.0) and 3.5 (1.1); $p=0.86$) between the preventive and control groups. After one year the sealants was retained in 42 (62.7%, CI 56.8-68.6) molars. The mean length of sealant retention was 12.5 (5.3) months. After 3 years carious lesions of occlusal surfaces only were included in the diagnosis. There were no differences in ages, mean number of erupted teeth or oral hygiene between groups. In the preventive (test) group carious lesions were diagnosed in 13 (19.4%, 14.6-24.2) molars. In the control group there were 32 (41.6%, 36.0-47.2) decayed teeth. Clinical efficacy of fissure sealants was 59.4%, OR=2.7 (1.3-5.8).

Conclusion: Fissure sealing with GIC is an effective preventive measure in young children with high caries risk.

Methods of funding: Belarusian State Medical University.

3353. SOCIAL NETWORK ANALYSIS: A NOVEL APPROACH FOR ORAL HEALTH KNOWLEDGE AND BEHAVIORS MODELING

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The purpose of this study was to explore the correlation between oral health behaviors and knowledge of school children as well as in friendship social networks.

Methods: To assess the relationship between social network structure and oral health knowledge and behaviors among primary school students, a valid and reliable questionnaire was developed in multiple steps. (a) A pool of items was developed from literature for expert evaluation. (b) Content validity was performed in two phases: In a qualitative phase, 10 experts, assessed each question determining the scale of each for calculation of the content validity index. In the quantitative phase, the content validity index (CVI) and content validity ratio (CVR) were assessed. (c) Qualitative face validity phase was performed using the impact score. (d) 10 students were asked to assess the questionnaire and to indicate difficulty or ambiguity in responding. (e) Test-retest reliability was assessed by Kappa statistics excluding, social network part. For evaluating the reliability of social network section, the proportions of agreement for the responses between two responses were calculated. The medical and health system is governed by two medical science universities in Tehran, Iran. In order to have a representative sample of the whole population, one primary school was selected randomly from the list of schools covered by each of medical science universities. All qualified students were given a self-administered questionnaire and consent was completed by parents. The questionnaire was developed to assess the relationship between oral health knowledge and behavior as well as their social network structure.

Results: A total of 421 (228 male and 193 female late primary school students) participated in the study with age range of 12-13 years old. Ordinal regression analyses was used to identify correlation between social network and oral health status. The response rate was 91%. The frequency of daily tooth brushing showed 24.2% (102) of the students brushed their teeth two or more times daily. 196 students (46.6%) brushed once a day and the rest (29.2%) reported no brushing. Daily dental flossing was reported by 97 students (23%), 28.4% of participants (120 students) floss more than once a week. 48.4% reported that they did not floss at all. The reported oral health knowledge scores ranged between 0 - 9 and were distributed with median 6 and interquartile range (IQR) 5 to 7. A significantly better oral health knowledge was reported by girls compared with boys ($p < 0.01$). Girls demonstrated a meaningfully higher level of flossing ($p = 0.006$) and brushing behavior ($p < 0.0001$). A significant difference was detected in levels of socioeconomic status between groups with different tooth brushing behaviors ($p < 0.01$) while it was not significantly different with flossing levels ($p = 0.25$). There was a positive relationship between a child's daily brushing frequency and the average of his/her friends' daily tooth brushing ($p < 0.001$). Flossing frequency was also positively correlated with friends flossing habit ($r_s = 0.25$, $p = 0.008$). In addition, child's daily tooth brushing was significantly related with average tooth brushing of his/her friends of friends (level 2); while for flossing such a relationship, was not detected. No correlation was found among friends' oral health knowledge.

Conclusion: This paper has highlighted the importance of friends' social network effect on oral health behavior. Understanding the relation between oral health behavior and social network will help policy makers to use this instrument for oral health promotion programs among adolescents. For instance educating hubs (popular students), may be a cost effective promotion program.

3384. REVIEW OF TEACHING SOCIOLOGY IN THE DENTAL CURRICULUM IN HUNGARY

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Social and behavioural sciences are an essential part of dental education. To understand the uptake of dental treatment by the Hungarian population, dentists and dental hygienists need to study the way that society functions in the present century.

Aim: The aim of this study was to review the dental curriculum and generate recommendations to improve the dental undergraduate curriculum from the point of cultural and social processes, and of how to address oral health inequalities.

Methods: Content analysis of medical sociology in the dental undergraduate curriculum through a narrative literature review of the most important Hungarian and English research on dental sociology.

Results: The content analysis focused on three different parts of sociology, which were dentists, patients and doctor- patient interaction. 1) The dentists are presented from the viewpoint of professional socialization of dental students, main fields and components of professional attitudes and the social status of the dentists, the burnout syndrome among dentists. 2) Patients, the inequalities of dental status were explained on the basis of socioeconomic status; the oral health behaviour, the dental check-ups and other visits to the dentist were shown by the health belief model. 3) Doctor- patient interaction was seen to be an essential part of healthcare. Other aspects included: the psychosocial model of mutual participation, the sociology of dental anxiety, main regularities of dentist-patient communications, patient satisfaction and its psychosocial indicators criteria for good dentist behaviour and going to the doctor process are involved in the curriculum.

Conclusion: Because oral health is an essential part of the general health and well-being of individuals and yet there are significant oral health disparities all over the world, in the light of the results of this review, it is important to incorporate medical sociology into the sociology of dental health and develop a curriculum which is more practice- oriented has a closer connection with dental public health and prevention.

3388. INFORMATION TECHNOLOGY ACCESS, KNOWLEDGE AND USAGE AMONG UNDERGRADUATE DENTAL STUDENTS OF AZAD UNIVERSITY OF ISFAHAN, IRAN

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Dental informatics combines dentistry with information technology (IT) for the purpose of education, patient care and research. The aim was to determine access, knowledge and performance of IT among dental undergraduate students of Islamic Azad University of Isfahan.

Methods: This cross-sectional study used a stratified random sampling method to collect the data from 150 dental students via self-administered questionnaires in 2015. Validity (CVI=98%) and reliability (Kappa value>0.8) of the questionnaire was assessed prior to the study. Islamic Azad University of Isfahan Ethics Committee approved the study. Chi- square test, mann-whitney, spearman correlation coefficient and linear regression model served for statistical analyses.

Results: Among the students (response rate=100%), 86 (58.9%) were women. Only 2 (1.3%) students indicated that they had no access to a computer, and 6 (4%) students did not have a personal email. A majority of students reported using a computer at home (140; 94%) and had access to the internet at home (129; 86%). Around 70% of the students reported their access to a computer and internet as good. Dental students had used the internet mostly for personal activities rather than academic reasons. The main obstacle to internet usage was time barrier due to the slow internet speed. Mean knowledge score of dental students was 11(SD 1.7; range 7-14). However, most of them were not familiar with any general (114; 78.6%) and professional dental websites (106; 72.6%). Most dental students (130; 87.8%) had used social networks but just a few (15; 10.3%) had checked their emails on a daily basis. A large number of students judged themselves competent in Microsoft Word (130; 86.6%) and Microsoft PowerPoint (126; 84%) and most acquired such skills through personal experience (119; 79.3% students). Professional use of IT was low. Less than 13% had used professional dental websites or had downloaded educational materials on a daily basis. Students with higher knowledge of IT and those who had reported more general IT usage, showed higher level of professional usage ($p<0.05$).

Conclusion: Dental students access to computer and internet was good. Most of them however weren't familiar with general and professional dental websites, and their professional usage was low.

3402. LEADERSHIP IN THE SWEDISH PUBLIC DENTAL SERVICE (PDS) IN A TIME OF CHANGE

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The aim of this study was to investigate how the PDS, run by 21 regional authorities called County Councils in Sweden, have managed to keep a strong market position in a time of changes in political ideologies and increased competition with the private sector.

Methods: All PDS-managers (Chief Dental Officers) having had the leading position for at least five years (n=22) were asked to participate in a semi-structured telephone interview about their leadership – a study approved by the Ethical Review Board of Malmö University. Sixteen persons participated and they were questioned about the impact of their leadership on the present position of the PDS-organisation, visions, short-time goals and strategies in use, personal actions and opinions on the progress of the competition situation. The questions were sent to CDOs by email before the interview. The interviews were audio taped and transcribed and analysed using the qualitative content analysis method.

Results: The CDOs had handled the situation of increased competition through brand building, “Folk tandvården” (in Sweden the name of the national PDS), and core value work related to both patients and employees, and less through competitive analysis. However, limited liability company CDOs had a slightly different appearance in their way to describe visions, strategies and short-time goals than the CDOs working in County Councils having more traditional administration forms for the PDS. They used business concepts such as customers, market shares, and yield ups, which did not emerge as clearly in the answers of the other CDOs. Most CDOs considered their own acting as important for a successful development of their PDS organisation.

Conclusions: The PDS seems to have a strong position in the Swedish dental care market and much effort had been put into consolidating this position.

3403. EDUCATION-RELATED INEQUALITY IN DENTAL CARIES BEFORE AND AFTER A MAJOR SUBSIDIZATION REFORM

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Between 2001 and 2002, major legislative changes were made in Finland; coverage of subsidized oral health care was extended to cover the whole population.

Aims: This study aimed to analyse education-related inequality in untreated dental caries and restorative treatment need among adults aged 30 years and older living in Northern and Southern Finland in 2000 and in 2011. In addition, factors explaining the education-related inequality in the untreated dental caries and restorative treatment need were examined.

Methods: Data were taken from the Health 2000 and 2011 population based surveys including information gathered by interviews and clinical dental examinations from Southern and Northern Finland. Participants were recruited via stratified two-stage cluster sampling. Final sample sizes were 2,423 in 2000 and 1,192 in 2011, of whom 888 participated in both study years. Education-related inequalities in number of decayed or fractured teeth were analysed using Poisson regression analysis, relative and slope index of inequality. Explanatory variables were age, gender, time since last dental visit, tooth brushing frequency, marital status, perceived general health and residential location. Ethical approval for the Health 2000 and 2011 surveys was obtained from the coordinating ethics committee of the Helsinki and Uusimaa Hospital Region.

Results: Average number of decayed or fractured teeth decreased from 2000 to 2011 (from 0.93 to 0.73 $p<0.05$). Absolute and relative education-related inequalities decreased approximately 50-60% and 30% from 2000 to 2011, respectively. Tooth brushing frequency and time since last dental visit explained approximately 30-40% of the education-related inequalities. The contribution of time since last dental visit to the education-related inequalities was smaller in 2011 than in 2000.

Conclusions: After the major oral health care reform in Finland it seems that, from 2000 to 2011, the levels of untreated dental caries and restorative treatment need decreased hand in hand with education-related inequality.

Methods of funding: Study was supported by Finnish Dental Society Apollonia.

Session 3b

OH Services Research

3322. DESIGNING AND VALIDATING A PUBLIC HEALTH SURVEY: A MIXED METHODS PARADIGM

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Public health phenomena are usually complex and multifactorial, and public health surveys often have to take account of many aspects and factors. Designing and especially validating such a survey can therefore be a very challenging process. Asking appropriate questions, that will yield useful and data specific to the research questions, is of high importance. Equally important is to validate the survey instrument to ensure the trustworthiness of the obtained data. The aim of this presentation is to describe how a public health survey is designed, validated, and eventually implemented in a specific population.

Methods: For this purpose, we used a specific example of a mixed methods survey which was created and validated in 2016 to assess the knowledge and attitudes of public health professionals on the role of emotion in health and public health practice. A purposeful sample of 6 public health experts completed a survey instrument containing a new taxonomy of the emotions for use in the self-assessment of emotional status in a community and related questions to determine face validity and content validity. According to their feedback, the taxonomy and the survey were significantly revised. Then, a sample of approximately 100 participants completed the survey containing the face and content validated taxonomy, in order to test construct validity. Factor analysis was used for quantitative questions and theme analysis for qualitative questions. Further, a sample of approximately 300 participants was asked to complete the final instrument containing the validated taxonomy and related questions to determine reliability. Reliability was assessed calculating Cronbach's alpha coefficient. Demographic data were also collected to investigate potential associations between these data and 'emotional status'.

Results: An adequately validated and reliable survey instrument was produced to address specific research questions and to explore potential solutions to the problem under study. 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 for public health purposes, and be able to note how a mixed methods approach can be applied to design a public health survey.

Methods of funding: Supported by Faculty Research Initiative Grant 2016, Walden University.

3334. REPORTED ACCESS TO DENTAL CARE IN SCHOOLCHILDREN FROM FAMILIES WITH LOW SOCIO-ECONOMIC STATUS

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Aim: To study the access to dental care in schoolchildren from families with low socio-economic status (SES) comparing to children from families with non-low SES.

Methods: The study was approved by the Regional Ethics Committee. Informed consent from the parents of children was obtained. Per capita family income less than the minimum subsistence level in the region was defined as low SES. In 2012 in 10 out of 30 Volzhskiy schools all schoolchildren from the families with low SES (430 children aged 7-17 years, LS group) were identified according to the list of the Educational Department. In the same schools 418 schoolchildren were randomly selected from the families with non-low SES (NLS control group). The groups were identical by sex and age of the children. The children were examined by an experienced dentist. The number (mean \pm standard error) of untreated decayed permanent teeth was calculated. The parents and the children were interviewed on the child access to dental care. The differences were assessed with Student's t-test.

Results: The mean number of untreated decayed teeth in the LS group was significantly ($p < 0.001$) higher than in NLS group: in 7-8-year-olds 1.7 ± 0.1 vs 0.7 ± 0.2 ; in 9-11-year-olds 2.0 ± 0.2 vs 0.8 ± 0.1 ; in 12-14-year-olds 3.1 ± 0.2 vs 1.1 ± 0.1 ; in 15-17 year-olds 4.0 ± 0.2 vs 1.2 ± 0.2 . The children from LS group visited a dentist during the last 6 months

less often than the children from NLS group: 172 of 430 (40.0%) vs 326 of 418 (78.0%) respectively, $p < 0.001$. The number of children who had visited a dentist 1-2 years before or did not remember when they had visited a dentist in LS group was higher than in the NLS group: 181 of 430 (42.1%) vs 34 of 418 (8.1%) answers, $p < 0.001$.

Conclusions: This sample of Volzhskiy schoolchildren from LS families reported more limited access to dental care than the schoolchildren from NLS families, and they had higher numbers of untreated permanent teeth.

The authors would like to acknowledge Volzhskiy school staff for their cooperation and help.

3338. REDUCING DENTAL INEQUALITIES THROUGH A SUSTAINABLY MINDED WORKFORCE: A POSSIBLE SOLUTION

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Introduction: Health and the environment are intrinsically linked; protection of the environment is essential for ensuring the long-term health of people and communities. As health practitioners, concerned with the well-being of patients, it is imperative we consider the environment whilst providing dental care. Dental care should be provided considering social, environmental and economic constraints, to reduce dental inequalities and the ensure resources for future generations simultaneously. To address these issues "An Introduction to Sustainable Dentistry and Measuring Carbon in Healthcare" e-learning module has been produced to educate the dental workforce to act sustainably and take a more holistic approach to health care delivery. The module is accessible for free via the " e-learning for health" platform for the NHS workforce.

Aim: An aim at the Centre for Sustainable Healthcare (CSH) is to raise awareness of the importance of sustainability in dentistry amongst dental professionals.

Methods: This poster details the methods within the module. Initiation of the module was the result of a project and stakeholder mapping exercise involving a programme reference group. A stakeholder analysis identified key groups which the team at CSH would need to influence. Project opportunities were mapped against key groups to isolate which projects could deliver the highest impact. Development of the e-module was deemed the highest impact project to influence a change towards sustainable practice. With the aid of the programme reference group and professionals with knowledge in sustainability and carbon modelling, development of the module commenced. The four Principles of Sustainable healthcare form the foundation of the module content. Disease prevention and health promotion with an emphasis on patient education and self-care can help reduce the burden on an already stretched health care system. Furthermore the development of lean service delivery pathways, with integration of specialist services and use of clinically effective low carbon medical technologies will reduce resource use. Adherence to the four Principles, considering the triple bottom line and wider determinants of health when designing dental systems and in daily clinical practice can enable provision of an efficient, more equitable dental service, thereby reducing dental inequalities in the population of interest. The module successfully launched on NHS Sustainability day this year. **Conclusion:** The module is currently under evaluation which will be reported on in the near future. We envision the training module could be used more widely across Europe, and be a driving force for a system wide change in dentistry, as the environment is a concern to all.

Methods of funding: Health Education England (Kent, Surrey and Sussex).

3342. A SURVEY OF REGISTRATION COSTS OF EUROPEAN UNION DENTISTS - INTERIM RESULTS

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In 2004/2005 a survey of Competent Authorities (Registration organisations) involved with dentistry in the European Union (EU) was performed. A follow up survey, performed by the Federation of European Dental Competent Authorities and Regulators Bodies (FEDCAR) and the Council of European Chief Dental Officers (CECDO) commenced in 2015. The aim of this survey was to ascertain the current costs of initial registration for a dentist and of annual (retention) fees thereafter, and to compare them with those reported in 2005.

Methods: The same questionnaire as used in the previous survey was employed. It included questions on initial and ongoing registration fees for dentists and dental specialists. Gross National Income (GNI) (formerly GNP) per capita

data were obtained from the World Bank and the fees were then calculated as a percentage of GNI and compared with those in 2004/2005. We report interim results on registration costs.

Results: In 2004/2005, 25 EU Member States (EUMS) responded to the survey. To date 17 EU Member States have responded to the current survey, of which 17 provided data on fees. In 6 (EUMS) no initial registration fee is charged. In those where one is charged, the range was from €3.70 in the Czech Republic to €1142 in the United Kingdom. In the 17 EUMS National GNI ranged from € 67,366 in Luxembourg to €21,109 in Hungary. Initial registration fees as a percentage of GNP ranged from 3% in the UK to 0.02% in the Czech Republic. Annual retention fees were charged in 12 EUMS and ranged from €1142 in the UK to €35 in Malta. Fees for registration as specialists were charged in 8 of the 17 EUMS.

Conclusions: The interim results from 17 EUMS and those from the previous survey indicate that there are wide variations in the practice of charging or not charging initial and retention registration fees to general dentists and dental specialists and in the cost of these fees EUMS.

Methods of funding: Health Education England. Funded by National Health Service and UK Government.

3358. COMPREHENSIVE DENTAL CARE IN PRIMARY CARE DENTISTRY SERVICES IN BRAZIL

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In 2012, a Program for Improving Access and Quality of Primary Health Care (PMAQ-AB) was implemented in Brazil to expand access to Primary Health Care (PHC), including dental care (added in 2000), and improve quality standards nationwide. The aim of this study was to evaluate the provision of comprehensive clinical dental care by PHC services.

Methods: A national census of the 18,114 PHC dental services that took part in PMAQ-AB. Co- variates included characteristics of the service and primary care dentists. The outcome, provision of comprehensive clinical dental care, was deemed present if a PHC dental service provided the following: scaling, composite and amalgam restorations, tooth extractions and pulpectomy. In addition, the presence of minimum equipment and materials to perform the above mentioned clinical care was evaluated. All services were evaluated by researchers trained for this purpose by research institutions all over Brazil under guidance of the Ministry of Health. Tablet computers were used for data input. The study was approved by the Ethics Committee of the Federal University of Rio Grande do Sul. Prevalence ratios were calculated by means of Poisson regression with robust variance.

Results: 1190 PHCs did not have minimum equipment and were excluded from the analysis. Only 5% (N=840) of the PHC dental services provided comprehensive care and had the minimum set of materials and equipment. With regards of the PHC services, high quality was found in services with the most dentists (Prevalence Ratio (PR) 1.16 [95%CI 1.14-1.19]), greater workload (PR 1.63 [95%CI 1.74-1.84]), where management provided information for health situation analysis (PR 1.14 [95%CI 1.11-1.17]), which

carried out monitoring of indicators of oral health (PR 1.12 [95%CI 1.10-1.15]) and which planned and programmed the oral health actions monthly with primary care teams (PR 1.03 [95%CI 1.01-1.05]). With regards of the dentist, higher quality was found in those who showed better employment ties (PR 1.27 [95%CI 1.23-1.32]), who had a career plan (PR 1.10 [95%CI 1.08-1.13]), had a post graduate qualification in public health (PR 1.06 [95%CI 1.05-1.09]) and undertook continuing education (PR 1.23 [95%CI 1.19-1.27]).

Conclusion: It is suggested that improvements are needed in the infrastructure of the dental offices of primary health care, as well as incentives for implementing changes in the health centers and incentives for the SUS (Unified Health System) for health professionals, so that changes reflect improving quality of care.

3376. TWO METHODS OF CONSCIOUS SEDATION IN CHILDREN (ENTONOX AND MID-AZOLAM) – EVALUATION

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The aim of 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: Parental informed consent was obtained for every sedation. Subjects were recruited from child 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). Frankl behaviour rating scale (F) was recorded 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, pain evaluation using 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 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 the cariogenic food 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: There were significant differences in childrens behaviour when using these two sedation methods and in a case of inhalation nitrous oxide-oxygen mixture, there was a change of relationship to the dentist. Further the presence of amnesia was associated with changes in the behaviour scale, not with the sedation method.

Methods of funding: Supported by program PRVOUK-P 28/LF1/6.

3380. PREVENTIVE EDUCATION FOR INTELLECTUALLY CHALLENGED CHILDREN AND THEIR CAREGIVERS

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The aim of the study was to compare the early diagnostic and school based screening possibilities of healthy and intellectually challenged children (ICC) in Hungary.

Methods: Ethical approval of the survey was given by the Regional Research Ethic Committee of Medical Center, University of Pecs, No. 6308. In the first part of our study institutes and foundations (for ICC) were selected randomly from the list available on the Hungarian National Tax and Customs Administration website for a survey on their oral screening opportunities. In the second part the data of 50 previously treated ICC were collected and compared to 50 age/gender related healthy patients according to their initial diagnoses at the University of Pecs, Paediatric Dentistry Department. For statistical analysis we used the chi-square, and Mann-Whitney tests.

Results: 1. Oral screening is only available in 50% of the ICC institutes, particularly located in the capital. There is high inequality between the early diagnostics and school based programs of the ICC and healthy children. 2. The analysis of the treated patients showed that the basic dental status of ICC at the first examination was significantly worse than for healthy patients. The time required for examination is also significantly longer for ICC. We found a great inequality of waiting time for treatment: this is significantly longer for ICC (special circumstances are needed, and also the organisation is slower).

Conclusions: ICC and their families or caregivers need intensive, individual and special preventive health education. We created a protocol for these patients to try to maintain oral health and to stabilise oral health status.

3396. NATIONAL URGENT AND EMERGENCY DENTAL CARE REVIEW (ENGLAND)

BASRA A.S. SHAH S.* Health Education England; Kent, Surrey and Sussex, England.

NHS Urgent and Emergency Care Services in England are experiencing rising demand. Patients with dental symptoms sometimes utilise these services when they would be better treated by a dental service. The variation in service provision needs to be better understood and was considered as part of the review of unscheduled dental services in England. To address the problem two stakeholder events were held, between November 2015 and February 2016, for those involved in the delivery or commissioning of Unscheduled Dental Care Services (UDCS) across England.

Aim: Their aim was to seek views on the barriers and challenges they perceived in either providing or commissioning these services and to share good practice.

Methods: Workshop themes were developed based on an initial audit of dental services combined with feedback from service commissioners. This information was used to formulate questions for the events. Workshop answers were analysed for key themes. These were then used to create a more detailed question guide that enabled researchers to explore these themes in more detail. After both events, all feedback from delegates was assessed, to identify factors that should be included in a review of UDCS across England.

Results: Approximately 200 stakeholders from the full spectrum of UDCS, from providers to commissioners, attended and identified a number of key barriers faced in delivering UDCS. These included: inconsistency in provision; inadequate information sharing; suboptimal communication between providers and commissioners (and across geographical areas) and insufficient time to provide good quality care in the time allocated. Many delegates felt that current provision in their areas was failing to meet the needs of vulnerable groups such as special care patients and care home residents.

Conclusions: Stakeholders strongly felt that national standards and guidance in providing/commissioning UDCS will facilitate more consistent provision across England. This should also mean that services will be more accessible to all patient groups, regardless of geography, therefore aiming to reduce inequity in access to UDCS.

3414. THE ROLE OF LEADERS IN PREVENTING HEALTH INEQUALITIES

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The aim of this literature review was to review the evidence for the importance of effective leadership and to identify key features of leadership that promote the reduction of health inequalities within healthcare systems.

Methods: The review used search and MeSh terms related to “leadership” and “health inequalities” and the PubMed search engine. Inclusion criteria were: published in the last 10 years and available in English.

Results: One thousand three hundred and eighty five papers were found, of which 52 papers were identified, by the sole reviewer, as relevant to leadership and health inequalities. The themes focussed on 11 key areas of the role of leadership in reducing health inequalities. These included adequate representation amongst leaders to reflect the demographic distributions within populations. Gender inequality amongst leaders was identified as an area that could potentially have an impact of health inequalities within populations. The political impact on the wellbeing and inequalities present within populations highlighted the role of health and social care in partnership with political groups to reduce disparities and the need for collaborative working, from a political global perspective, to have a greater impact on worldwide health inequalities. The literature suggested that Community leaders within populations can empower communities, reduce health inequalities and promote social change. Community leaders can also act as leverage points in the wider public health agenda working with leaders within the health sector. Given that these inequalities are related to health and health outcomes, many papers discussed the role of clinical leadership across health professions and the responsibility to appropriately train and develop clinical leaders and to ensure leadership succession, sustainability and the legacy of programmes to reduce health inequalities. Key issues in the future are the continual change within health services and the need to ensure consistent leadership in relation to reducing inequalities through change, and having an understanding of digital enablers to reduce inequalities.

Conclusions: These results suggest that key features of good leaders are: inter-professional working and networking, political awareness, empowering others and a strong drive and vision with resilience. Drivers for the reduction of health inequalities included, political input and influence, representative workforce and leaders and inequalities within leadership roles, global and local collaboration, involvement of the third sector and community leadership, clinical leadership, succession planning for clinical leaders and a knowledge and understanding of the digital enablers to reduce health inequalities. However some health inequalities are ingrained and built into the health systems. Analysis via institutional theory suggests that leaders are required to promote change at all levels to tackle the underlying causes of health inequalities.

Session 4b

OHRQoL

3343. DEVELOPING THE PHARMACY WORKFORCE TO HELP REDUCE INEQUALITIES IN ORAL HEALTH

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Collaborative working within community-based healthcare services can lead to improved patient care and improved access to services. Variation in access to services exists across the UK, both in terms of availability and accessibility of dental services. Community pharmacies offer an opportunity to improve access to care, through delivery of oral health advice and signposting patients. Increased collaboration could also enable pharmacists to better advise patients on oro-facial pain, oral care and dental services; therefore, contributing towards making every contact count and helping to reduce inequity in access.

Aims: To improve the oral knowledge, skills and understanding within community pharmacies and improve their integration and collaboration with dental services.

Methods: This project was based in Kent, Surrey and Sussex and stakeholder meetings were held between pharmacy and dental professionals to identify methods of improving collaboration and to understand the oral training needs of the pharmacy workforce. Involved in these stakeholder meetings were community and hospital pharmacists, dentists and dental care professionals.

Results: This project resulted in the production of 10 webinars and factsheets for pharmacy professionals about oral/dental issues, which were developed by the stakeholder meetings identifying topics that should be covered. Another outcome is the promotion of integration in the education and training of the dental and phar-

macy workforce, which will be achieved by the development of a dental pain and pharmacy group to support the development of the factsheets/webinars and ensure communication between pharmacy and dentistry colleagues.

Conclusions: The project identified that dental and pharmacy professionals have a desire for increased collaboration. Communication and shared learning needs to be improved at undergraduate and postgraduate levels in order for pharmacies to provide the best advice to all patients. Longer-term changes in access to services and improvements in oral health will need to be monitored to identify whether these collaborations result in improved care. This model could provide a framework for other countries that are facing similar access challenges. Blended learning and access to common resources could support countries in reducing inequalities in access to oral health advice.

Methods of funding: Supported by funding from NHS England.

3352. DENTAL CARIES: A PATENT ANALYSIS

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Although there have been significant achievements in dental caries prevention and management in the European Union (EU), there is still a lot to be done. One approach to reduce caries prevalence is to promote novel technologies in prevention, diagnosis and treatment. The current EU Health Strategy supports and sets development of new technologies as a priority since new technologies can contribute to the efficiency and sustainability of health systems.

Aim: The aim of this work was to provide a patent landscape analysis to detect patterns of innovation in the area of caries research.

Methods: Patent analysis is a well-established method for studying development in a particular research area. In this study patents and patent applications were extracted from the Patbase, an international database from over 100 patent issuing authorities worldwide. The patents were searched combining different search terms related to dental caries in the titles, abstract, claims and examples of documents. Searches were limited to human necessities (CPC A61). **Results:** The analysis was based on patenting activity trend, geographical distribution, research topics and patent holders. The patent search resulted in 2089 patent families with 12640 applications. The analysis of the place of patent filing resulted in 80 jurisdictions, with strong US dominance. To understand the technology focus, patents were grouped under three concepts: prevention, diagnosis and treatment. The highest numbers of patented innovation was associated with a few directions in treatment research. The overall patenting trend showed an increase in filings up to 1992, then a second spike up to 2015. Although the main patent holder was the Colgate Palmolive Co. out of 1371 assignees, in the field of prevention Johnson and Johnson had an important role.

Conclusion: Patenting activity was found to have been intense in the last 10-15 years. Private sector companies dominate a wide variety of types of research, including the field of prevention.

3356. ORAL HEALTH CARE HABITS, OBSERVATIONS FROM A RAPIDLY DEVELOPING HUNGARIAN VILLAGE

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Oral health plays an important role in general health. Developing oral healthcare habits, and integrating preventive approaches into the population is essential in the 21st century. We investigated this in a south-east Hungarian village as part of research by the Hungarian Central Statistical Office, with existing ethics approval. Puszaotlaka was chosen because previous work showed a huge recent increase in economic and social data.

Methods: In July 2015 a questionnaire was voluntarily and anonymously completed by 277 people from the population of Puszaotlaka, whose mean age was 47 (SD: 24.1). We asked about general oral healthcare, nutrition, habits concerning oral health, frequency of dental check-ups and how people evaluate their oral health. Statistical analysis used SPSS 20.0, examining frequency, means and cross tabs in

different sex and age groups. In an oral screening examination 35 people were inspected voluntarily. Data were compared with the European Health Survey.

Results: Only 37.8% (84) of the responders brushed their teeth once a day and 15.3% (34) brushed less than once a day. Only 38.6% (88) of the participants smoked, and 75% (168) visited the dentist less than once in a year. 97 (44.7%) had clear knowledge of their poor dental health. There were large variations in answers by different sex and ages groups. According to the European Health Survey at least one third of the Hungarian population has a decayed tooth. Clinical examinations in the village gave a rate of 65.7% (23). There is poor access to dental care in Pusztaotlaka. The nearest dentist's office is 10 km away.

Conclusions: Preventive dental activity should increase in the village, and should try to motivate the population to carry out better oral hygiene. Encouraging dental check-ups would allow treatment of early dental problems and encourage improved oral hygiene.

Acknowledgement: Supported by the Hungarian Central Statistical Office. Registration number: KSH/8693-1/2016.

3360. THE DENTAL PUBLIC HEALTH CURRICULUM IN DENTAL SCHOOLS IN TURKEY: A PILOT STUDY

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In contrast to clinical teaching, Dental public health is unique and challenging because the patient is a population, such as a school, neighbourhood, city or even country. The dental curriculum for undergraduates must prepare them to contribute to the health of both individual patients and for the public health. Graduating dental students will become the healthcare leaders tasked with helping to maintain or improve the health and welfare of the population.

Aim: The purpose of this survey was to assess the curriculum, the teaching-learning experiences and also dental public health based strategies taught at the undergraduate level in some dental schools in Turkey. Ethics approval was granted and agreeing to complete the questionnaire was viewed as consent.

Method: The process used was to review the existing dental public health curriculum in a convenience sample of Turkish dental schools. A questionnaire seeking details of the teaching of dental public health was distributed among 12 dental schools in Turkey.

Results: There was reported to be no department or section of dental public health in six of the dental schools. However, 11 of the dental schools gave education of DPH in the final year of study and this including occasional lectures. 7 of the schools operated outreach visits for the treatment of patients. 3 schools had a DPH programme director or a chairman of a DPH section and all twelve indicated that they plan to extend the teaching of DPH dentistry in the future.

Conclusion: A flexible curriculum is available in some dental schools included in this study. This study demonstrated to need for increased teaching of dental public health topics in those dental schools and a need for further research.

Acknowledgement to Dr Alon Livney, Professors Ivor G Chestnutt, Prof Jorma Virtanen.

3361. CONTINUED EDUCATION IN PUBLIC HEALTH DENTISTRY: DISTANCE LEARNING IN BRAZIL

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Distance Learning represents an opportunity to provide public health dentists with evidence-based information, as face-to-face approaches are more expensive and time consuming. In Brazils Public Health System, few courses target public health dentists in approximately 1000 Public Specialized Dental Care Centers (CEO).

Aim: to describe a series of distance learning continuing dental education courses targeting public health dentists working in CEO throughout Brazil and to evaluate the satisfaction of dentists who completed it.

Methods: The University developed and offered a series of 6 online courses comprising 60 hours each and addressing the following areas: 1) Oral Medicine; 2) Minor Oral Surgery; 3) Endodontics; 4) Periodontics; 5) Special Care Dentistry; 6) Dental Public Health Services Management. Pre-register took place between May and Sep/15. Courses were available on a Moodle Platform, between Oct and Dec/15 and contents were developed using problem- based learning methodology. This was an evaluation study that did not require Ethics Committee approval. However, participants consent was sought, as they were told that the information contained in the forms could be used for research purposes. Confidentiality of data was assured. Two questionnaires provided information about demographics, access to, use of and satisfaction. In addition, 130 videos were posted as open access on YouTube.

Results: 2147 dentists pre-registered, of which 409 (19%) completed the courses. 383 of those (93.6%) consented to participate. Health Services Management had 515 pre-registrations (24%), and was the most frequently completed 129 (31.5%). Most accomplishers were women (71%), the mean age was 38.5 years (± 9.8), and 214 (55.8%) worked in CEO clinic, 132 (34.4%) in Brazilian South region. 213 accomplishers (52%) completed evaluation forms, with the Moodle platform rated as good or very good by 206 (97.1%). Some 38 (17.8%) participants rated the time to accomplish the courses as short or extremely short. Open videos had 30,119 views “socioeconomic inequalities and health” with 2061 (6.8%) views was the most popular.

Conclusions: Distance learning provided access to continuing education to a large number of professional (409) and reached the target audience (214 CEO professionals). Dropouts were high and more frequent in the more deprived North and Midwest regions of Brazil. The number of open views suggests that the topics were of interest for dental care providers. These initial results lead to improvements, mainly provision of student support and increase in platform access times, in the 2016 Edition of the courses.

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3368. THE ASSOCIATION SOCIAL DENTAL BUS (ASBD): A DENTAL EMERGENCY AND SOCIAL STRUCTURE

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Aims: 29% of the French population is no longer able to seek treatment. It is in this context that the Social Bus Dental Association was created, on 15th October 1996, to participate, promote and facilitate access to dental care for the poorest, including the provision of of emergency care, to those not enjoying the opportunities to use the health national care system, by commissioning and operating a mobile dental clinic.

Methods: A dental practice was designed in an « Iveco » van respecting all the rules of hygiene and administration. It is itinerant and there are 9 sessions per week, held at charitable institutions. The Bus is operated in Paris by a team of 35 voluntary dentists, with a coordinator in charge of leading and managing the association, a driver / multi assistant moving the bus and providing operational maintenance and a dental / social assistant directing patients to the various services to obtain care and treatment.

Results: In 2015, a total of 320 sessions were held in the bus, 2061 patient consultations took place including screening / orientation of about 455 patients. The patients treated in the bus are generally young (73% of patients are under 40 years old) and predominantly male (79% men to 21% women). The treatments performed by voluntary dentists are mainly divided between conservative care, endodontic and periodontal treatment and extractions or oral surgery.

Conclusion: With a modern and functional mobile unit and with a motivated team of voluntary dentists providing over 300 sessions per year, the bus has a dual role of providing dental emergency care and addressing social inequalities. It is also provides a friendly welcome, bringing immediate pain relief and creating the opportunity for social rehabilitation through oral rehabilitation. Acknowledgement of sources of funding: Financial partners over the

years are numerous. We thank in particular the National Order of Dental Surgeons, the Regional Agency of Health and the city of Paris

Methods of funding: Financial partners over the years are numerous. We thank in particular the National Order of Dental Surgeons, the Regional Agency of Health and the city of Paris.

3409. EVALUATION OF THE BANDAR ABBAS CITY DENTISTS KNOWLEDGE ABOUT ANAPHYLACTIC SHOCK RELATED TO LOCAL ANESTHETIC DRUGS

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Recent Epidemiology studies suggest that the use of drugs which are the cause of anaphylactic shock have increased globally, including in developing countries. Familiarity with the prevention of anaphylactic shock, especially after the administration of local anaesthetics is of very significant importance for dentists.

Aim: The aim of this study was to determine the awareness of dentists in Bandar Abbas city of the symptoms, signs and management of anaphylactic shock.

Methods: This study was descriptive-analytical and cross-sectional. During 2015, all dentists working in private offices or dental clinics in Bandar Abbas were invited to participate. Those who agreed received an explanatory note and a questionnaire, which had been piloted. It contained 23 questions on dosage and type of local anaesthesia.

Results: The questionnaire was completed by 65 dentists of whom 23 (35%) scored less than 50%. Many were unfamiliar with the symptoms and signs of anaphylactic shock and none answered all the questions correctly particularly those associated with anaphylactic shock.

Conclusions: The results of this study showed that most of dentists who completed the questionnaire did not have enough knowledge about anaphylaxis. Training on this topic should be offered to dentists in Bandar Abbas.

3410. EVALUATION OF PERCEPTION DIFFERENCES OF SMILE ESTHETICS BY FEMALE PATIENTS, DENTAL STUDENTS, GENERAL DENTISTS AND SPECIALISTS IN TEHRAN, 2013

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Concepts of beauty can vary among people of different age, gender, educational level, and cultural background.

Aim: the aim of this study was to evaluate the perception differences of smile aesthetics by female patients, dental students, general dentists and specialists in Tehran in 2013.

Methods: A smiling photograph of a young adult female was taken and digitally altered for three components (gingival exposure, lateral-to-central incisors length ratio, and intra-central mesio-incisal angle) by Adobe Photoshop software. One hundred individuals consisting of 20 female patients, 20 dental students, 20 general dentists and 40 specialists (20 in operative dentistry and 20 in prosthodontics) were selected at random and asked to assess the modified photographs and select the most attractive and unattractive pictures respecting each component. The 100 assessors included 40 males and 60 females with an age ranged between 24-68 years and a mean age of 38.4 years. Data were statistically analyzed with SPSS software. Kruskal-Wallis and Mann-Whitney tests were used to verify significant differences, at the $p < 0.05$ level, among individual assessors.

Results: In respect of the assessment of the most unattractive gingival exposure, female patients differed significantly from general dentists and specialists in operative dentistry ($p < 0.05$). Female patients perception of most unattractive lateral-to-central incisors length ratio was significantly different to that of dental students, general dentists and specialists in operative dentistry and prosthodontics ($p < 0.05$). Males presented significantly different perceptions to females in most unattractive lateral-to-central incisors length ratio and most attractive intra-central mesioincisal angle ($p < 0.05$).

Conclusion: The findings of this study suggest differences in aesthetic perception between patients and dental professionals as well as between males and females, dependent on the nature of evaluated smile component.

3417. ORAL HEALTH RELATED QUALITY OF LIFE BEFORE AND AFTER CONSERVATIVE PERIODONTAL THERAPY

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The patient's perception regarding the quality of life in relation to oral health is an important aspect for the success of treatment.

Aim: The aim of this study was to assess the oral health related quality of life before and after conservative periodontal therapy.

Methods: This prospective study enrolled all patients who attended a private practice in Tirgu Mures, between 1 September 2015 and 15 October 2015. They were invited to take part in this study, 180 accepted the invitation. 112 females and 68 males, aged between 25-60 years and were randomly distributed in two groups (test group and control group) according to the following inclusion criteria: diagnosed with moderate periodontitis, a minimum of four sites with probing depth <4 mm (PD), presence of <16 teeth, no systematic periodontitis treatment within the last 12 months, smoking >10 cigarettes/day, good general health. The test group received conservative periodontal therapy consisting of oral hygiene instructions, scaling and root planing. The control group received no treatment. Using the oral health related quality of life (OHRQL) questionnaire the following factors were assessed: functional limitation, physical pain, psychological discomfort, psychical disability, psychological disability, social disability and handicap. The OHRQL model was used. Responses were recorded by using a five-point scale: 0, never; 1, hardly ever; 2, occasionally; 3, fairly often; 4, very often. After four weeks, a reevaluation was performed, and the patients from both groups completed the same questionnaire. The periodontal status was recorded at baseline and after scaling and root planing: The following parameters were assessed: bleeding on probing, probing depths (PD), and clinical attachment level (CAL). The presence or absence of plaque was evaluated with plaque index (O'Leary et al. 1972). Gingival inflammation was assessed by the gingival index (Loe and Silness, 1963). Clinical examination of periodontal status and personal interviews for oral health related to the quality of life were conducted. The study protocol was approved by the Ethics Committee of University of Medicine and Pharmacy Tirgu Mures, Romania. All the patients recruited for the study signed an informed consent form.

Results: At baseline, the results showed poor scores for oral health related to the quality of life in the control group (86%, 69 patients) compared with the test group 28% (18 patients). Females perceived the quality of life related to oral health to a greater extent than males ($p < 0.0001$). The patients had a poor initial outlook on their oral health, with 58% rating their overall oral health as poor compared to others of the same age. In the control group, only 9% (8) of the patients perceived their oral health as good. Twelve percent (13) of patients indicated that general health was not a major concern. There was no significant difference between the genders for functional limitations and social well-being.

Conclusions: Conservative periodontal therapy may lead to substantially higher gains in periodontal status, and it also greatly improves the quality of the life in patients.

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3424. CLINICAL GOVERNANCE IN GENERAL DENTAL PRACTICE (A REVIEW OF LITERATURE)

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Clinical governance is a key strategy to improve quality of health care services and consists of seven main areas. Clinical Governance was introduced to the National Health Service (NHS) in 1997 as a framework through which organizations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will be established. The aim of this poster is to present results of a literature review which compared different researches and frameworks for clinical governance in general dental practice.

Methods: A comprehensive review of studies of clinical governance and dental practice was performed using MED LINE and Google Scholar databases. Inclusion criteria were: English language publications in Pub Med and Google scholar since 1999-2016. The search terms were: clinical governance, clinical audit, quality assurance and dental practice. Out of 61 publications, after applying the inclusion criteria, 15 were selected for data extraction.

Results: The results of this review showed that the concept of clinical governance in dental practice is new and many countries are trying to establish frameworks to evaluate dental services based on clinical governance concepts.

Conclusions: The Iranian Ministry of Health and Medical Education (MOHME) has promoted clinical governance as a framework for safeguarding quality and safety in all hospitals since 2009 but there was no evaluation tool for clinical governance in dental clinics in Iran. As a result, a framework to improve performance in oral health services is required. It will be informed by the results of this literature review.

Session 5b

Older People Epidemiology

Chairs: *Luc De Visschere, Melinda Székely*

3359. HUNGARIAN DATA BASE OF SJÖGREN'S SYNDROME

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Sjögren's syndrome is a chronic, autoimmune, inflammatory disorder characterised by focal lymphocytic infiltration of the salivary and lacrimal glands. The infiltration of these glands leads to extreme reduction of salivary and tear secretion which cause the main subjective symptoms: the dry eye and dry mouth.

Aims: The basic aim of this research was to make a statistical database of Hungarian patients with Sjögren's syndrome, which was established in 2009 and to explore important relationships between the different diagnostic results. In the future there will be an effort to elaborate new non invasive salivary tests using modern microbiological methods (e.g miRNS, DNS methylation examinations) to replace the current invasive lip biopsy.

Methods: The study accessed 1089 sialometrical and approximately 399 immunological and ophthalmological data of patients (between 19-92 years of age). All patients had undergone a routine dental examination (both cariological and periodontal), sialometry was performed, during which non stimulated saliva, was collected for 10 minutes. The normal ratio is 0,3 ml/min and under the value of ≤ 0.1 ml / min was regarded as hyposalivation. In case of clinical suspicion minor salivary gland biopsy is performed. Focus score ≥ 1 (focus: minimum 50 aggregated lymphocytes in 4 mm² gland tissue) was regarded as positive for Sjögren's syndrome. At the Department of Ophthalmology brake-up time of lacrimal film (BUT) was examined, (under 10 seconds was considered abnormal), then the erosions of the conjunctiva and cornea were visualised. At the National Rheumatology and Physiotherapy Institute specified Anti-Sjögren's- syndrome- related antibodies A/B (aSSA/SSB), rheumatoid factor (RF) and antinuclear antibody (ANA) were assessed.

Results: Only 9.3% of all examined patients were diagnosed with Sjögren syndrome. Of these 50% had primary Sjögren syndrome. Their average value for sialometry was 0.4ml/min and 90% were female and 10% were male. Mean age was 54.6 years (range 20-87 years). The most important finding was that more and more younger patients were in their 30's and 22% were between 20-40 years of age.

Conclusions: The Hungarian representative data base is unique, because there is no other comparable data base in Hungary. It enables guidance to be given to dentists, ophthalmologists and general practitioners to it make easier to establish a diagnosis of Sjögren's syndrome thereby patients probably will spend less time in the labyrinth of Hungarian healthcare.

3366. CLINICAL CONSIDERATIONS ON DENTAL REHABILITATION OF ELDERLY PATIENTS TREATED BY ANTIRESORPTIVE THERAPY

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To highlight the preventive considerations of dental rehabilitation for elderly patients treated by anti-resorptive drugs (ARDs), such as bisphosphonates, through the description of a clinical case.

Background: antiresorptive drugs play a crucial role in osteonecrosis of the jaws (MRONJ); having a significant negative impact on the quality of patients' lives. The subject of this case study was an 86-year-old female patient with acute sensitivity from her upper left maxillary quadrant. She gave a medical history, which included hypertension, heart attack, hypothyroidism and asthma. She had been diagnosed with postmenopausal osteoporosis and had been receiving ARD therapy for 5 years besides many other medications. She was allergic to lidocaine and penicillin. Her relevant dental history was that she had a nearly 20-year-old acrylate veneered metal bridge in her maxillary arch with secondary caries. She suffered from chronic periodontitis. A radiograph revealed calcified root canals. Her lower arch was edentulous with a flat lower ridge. The main goal of her treatment plan was to reduce the number of the surgical treatments in her mouth to a minimum by only extracting teeth where, due to existing caries, future restorations would have subgingival margins. Teeth that were coronally unrestorable, but did not have restorations subgingivally, were root canal treated and covered by metal caps so that they could function as overdenture abutments. Function and aesthetics were achieved in the maxilla by an overdenture and in the mandible by a removable complete denture.

Discussion: Patients taking ARDs are generally over 60 years of age. Thus, age related problems such as root canal

calcification, increased bone resorption, adverse effects of medical drugs complicate care. Most studies have focussed on the treatment of existing osteonecrosis, while preventive considerations with regard to prosthodontic and conservative dentistry remain unclear. The main reason for MRONJ is the extraction of a tooth. The case reported in this abstract highlights a possible way for tooth preservation. The preventive measures which were taken were: oral hygiene instruction, synchronising the time of the root canal treatments with the extractions to minimize the dose and duration of antibiotic therapy, providing chlorhexidine mouthwashes before any operative treatment and root canal treatment using non-traumatic rubber dam isolation, minimising the number of invasive dental treatments and frequent monitoring for early detection of any mucosal lesions.

3369. CHANGES IN GENERAL QUALITY OF LIFE AND ITS ASSOCIATION WITH ORAL HEALTH

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The aim of this study was to evaluate if changes in oral health status were associated with decline in WHOQOL- bref domain scores.

Methods: This longitudinal study was part of a cohort investigation of community dwelling older people in southern Brazil. A random sample of 872 individuals aged 60 or more was evaluated at baseline in 2004. Follow-up was carried out in 2012, with the population for the current study consisting of 389 of the original sample of older people. Interviews were performed to assess socio-demographic data variables and quality of life (WHOQOL-bref). Oral examinations assessing the number of teeth and use of prostheses were performed. Participants were asked to rate their satisfaction with chewing ability and oral appearance. Change in quality of life was categorized as positive, encompassing participants with improved or stable WHOQOL scores, or negative, comprising of participants with a decline in these scores. Risk ratios were estimated by means of Poisson regression.

Results: Overall, 238 (61.2%) participants had experienced a decline in their scores of scores for the WHOQOL physical domain, 229 (58.9%) had a decline in the psychological domain, 308 (79.2%) had a decline in the social domain and finally, in the environment domain, 241 (62.0%) had a lower score.

No oral health variables were associated with changes in the physical domain. Tooth loss was associated with decline in the psychological domain RR 1.04 (1.01-1.07), as was improved satisfaction with oral appearance, RR 0.76 (0.58-0.99). Improved satisfaction with oral appearance was also associated with decline in the social domain, RR 0.79 (0.65 - 0.96) and with decline in the environment domain, RR 0.72 (0.55 - 0.95).

Conclusion: The results indicate that preventing tooth loss and addressing a patient's concern with dental appearance could have an impact in the general quality of life of community dwelling older people.

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3404. KNOWLEDGE OF DENTISTS TOWARDS ANTIBIOTIC PROPHYLAXIS IN BANDAR ABBAS CITY 2015.

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The aim of this study was to determine Bandar Abbas dentists knowledge of antibiotics prophylaxis in 2015.

Methods: This descriptive analytic cross-sectional study involved dentists in Bandar Abbas in 2015. All dentists 137 in the city were invited to take part in the study. A piloted questionnaire with 53 questions on the topics of the need for antibiotic prophylaxis and prophylaxis regimes and an explanatory note were handed out to the dentists and collected in the same day. Multi-variant regression was used for data analysis.

Results: One hundred and twenty six dentists completed the questionnaire of whom 69 (53%) were men and 57 (47%) were women. The mean age of participants was 44.9 years. Mean time spent from graduation as a dentist was 11 years. Mean score for correct answers to questions on when and why to provide antibiotic prophylaxis was 72.9 (of a maximum score 104). Sixty three dentists (50%) scored less than 63 (50%).

Conclusion: In the sample of dentists, who replied to the questionnaire, 50% showed poor knowledge of when and why to prescribe prophylactic antibiotics. If this is also true for other dentists in Iran there is a need for a national educational program on this topic.

3405. CARIES STATUS OF PREGNANT WOMEN IN SOUTH-EAST HUNGARY IN THE BEGINNING OF THE 21ST CENTURY

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The aim of this study was to collect data regarding the caries status of a well determined group of pregnant women – as there has been no epidemiological survey of the dental health status of this group in Hungary, for more than ten years. **Methods:** After ethical approval, the socioeconomic and demographic data of 130 women who were in the second half of pregnancy were collected via questionnaire between 1 April 2011 and 31 March 2013 at the University of Szeged, Dental School. They arrived at the

dental school after referral by district nurses in the Obstetrics and Gynaecology Outpatient Clinic. As part of their prenatal care program they received information about a possibility of an oral examination and they themselves had to book the appointment and go to the dental clinic where the screening took place. Only systemically healthy women took part in the study. Their caries status was assessed by two calibrated dentist according to WHO (1997) guidelines. The DMFS and DMFT indices were calculated and compared with the socio-demographic data using one-way ANOVA. Third molars were examined but not included.

Results: The age distribution and number of pregnancies of the women in the study group was similar to that reported for all pregnant women in Hungary in 2011. However, their educational level differed in that 61 (46%) had received higher education, 86 (52%) worked in professions and 116 (89%) were city dwellers. In this respect city dwellers and highly educated women were overrepresented in the group. The mean age of the pregnant woman was 31 years. They had a mean DMFS index of 19.41, and their mean DMFT index was 10.05. Their caries status was related to the age ($p=0.008$) and to the number of pregnancies ($p=0.007$). However, no correlation was found with education, occupation and place of residence.

Conclusion: The caries status of this study group was better than in previous examinations in Hungary, besides socio-demographic conditions, probably the better motivation of women who attended the screening had a major influence on this result. The importance of the study was to obtain information about pregnant womens oral health status; since future mothers knowledge and attitude greatly affect the oral health status of their children.

3411. EVALUATION THE PREVALENCE OF LOCALIZED AGGRESSIVE PERIODONTITIS IN 15-18 YEARS OLD BOYS FROM BANDAR ABBAS CITY IN 2015.

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Periodontitis is an inflammatory condition that damages gums and can destroy the jawbone. Localized aggressive periodontitis (LAP) is the disease of dental supporting tissue which differs from chronic periodontitis because of: 1) fast progression 2) low rate of plaque index and calculus 3) History of familial periodontitis. The localized form usually occurs in puberty and damage is limited to permanent first molars and incisors that can lead to loss of teeth at an early age.

Aim: The aim of this study was to determine the prevalence of LAP in 15-18 years old male students in Bandar Abbas city.

Methods: In this cross sectional study, data were collected with observation, examination and questionnaire among Bandar Abbas male students using a multi-stage systematic cluster sampling method. An examination of students was performed in two steps, In the first stage randomly selected high schools were visited and all 15-18 year-old boys, whose parents has agreed could take part and who gave their consent were given a periodontal examination. Those students who had pockets of 4 mm or more in more than one tooth then attended the School of Dentistry and were

evaluated radiographically. Patients diagnosed with localized aggressive periodontitis were thus identified. The ethics committee of the Hormozgan University of Medical Sciences approved the study.

Results: Among 949 students, after first step examinations, 11 students had probing depth of 4 mm or more, and after second stage evaluations two were diagnosed with LAP, so the prevalence was 0.2 percent.

Conclusion: There was no significant difference between prevalence of LAP in Bandar Abbas and other regions in Iran.

3418. EXPLORING REASONS OF LOW DENTAL ATTENDANCE IN PREGNANT WOMEN: A QUALITATIVE STUDY

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Background: Despite the high prevalence of oral problems among pregnant women and their association with pregnancy outcome, dental service utilization in this period is still low.

Aim: This study aimed to explore reasons for low dental attendance in pregnancy from a pregnant women's point of view. **Methods:** In this qualitative study, ten in-depth individual semi-structured interviews and two organized focus groups were conducted by a dentist and a midwife as facilitators to explore the points of view of the pregnant women about dental care during pregnancy. Participants (n=22) were selected conveniently and purposefully from those attending public health centres, in two socioeconomically different districts of Tehran, Iran, for their routine prenatal checkups, in February 2015. A topic guide was used on demographic and pregnancy related questions, their history of receiving dental care and its barriers. After saturation of data, the interviews were audio-taped and transcribed with the permission of the participants and then coded for content analysis using MAXQDA10 software.

Results: The age of the pregnant women ranged from 18 to 45 years (mean age: 30.4±7.5 years) with a mean gestational stage of 25.3±6.4 weeks. Seven of the women (32%) had academic education. Of 350 extracted codes, the major findings as reasons of low dental attendance in pregnancy were categorised within seven main themes, Cost of dental care, deficient oral health knowledge and cultural barriers, physiological changes, psychological conditions, Lack of time, Unavailability of a qualified dentist.

Conclusions: Financial deprivation and a lack of knowledge were reported as the most common reasons for low dental attendance during pregnancy. Therefore, there is a need to prioritize and tackle the barriers identified in this study to increase dental attendance in this period.

3419. THE DEVELOPMENT OF GRAPHIC: A SERIOUS GAME FOR DENTAL PUBLIC HEALTH EDUCATION

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GRAPHIC, a serious game for dental public health (DPH) education, stands for Games Research Applied to Public Health with Innovative Collaboration. The aim of this paper is to provide an overview of the development and refinement of GRAPHIC. According to the game concept, students firstly are provided with information of a population (a learning scenario), and then they are required to select the best five options of oral health promotion programme using contemporary evidence to improve the oral health of their population. This game has been used since academic year 2011/12. Feedback on the use of GRAPHIC was provided by staff and students annually, such that four versions of the game have been developed.

Methods: GRAPHIC was evaluated using data from pre- and post-knowledge tests, direct observation, indirect observation using log data of game activities, and feedback provided by students and tutors from feedback questionnaires, personal interviews, and focus group interviews.

Results: The first version [GRAPHIC-I] was developed and used for final year dental students at Kings College London in academic year 2011/12 and 2012/13. Students, tutors, and a game developer were interviewed in academic year 2012/13, demonstrating that the game was useful although improvements of the usability and entertainment were required. This led to the development of GRAPHIC-II, in which the usability was significantly improved; however, the entertainment aspect was not much improved although the game was more colourful. Since GRAPHIC-II seemed very helpful, it was considered to be used as an international learning tool, so the game was piloted in Mahidol University, Thailand. Using feedback from Mahidol students, GRAPHIC-III was developed in English and Thai versions to be used in academic year 2014/15. After game completion, as part of their DPH education, students from both institutions were assessed by pre- and post-knowledge tests, without any major problem of the usability,

but they reported that the game could be more engaging. Log data showed the variation in attempts. Therefore, GRAPHIC-IV included an interactive feature to the learning scenario part, using Adobe Flash, where students could control a cartoon character walking around a town to find relevant information. Also, in this version students had limited attempts to submit answers (n=20). Together they enhanced the visual experience of the programme and encouraged students to provide considered responses. DPH knowledge was improved in both institutions, and this version rated as more engaging.

Conclusion: Serious games seem to be practical learning tool for DPH education, as they engage students to address the oral health needs of a population.

3420. COULD A DENTAL PUBLIC HEALTH GAME BE EFFECTIVE FOR DIFFERENT LEARNING CULTURES?

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The aim of this study was to explore how a serious game, GRAPHIC (Games Research Applied to Public Health with Innovative Collaboration), could be effective for students from different learning cultures.

Methods: Final-year undergraduate students (2015/16) from Kings College London [KCL] and Mahidol University [MU] were invited to use GRAPHIC in their own language; however the scientific evidence was available in English only. GRAPHIC requires students studying Dental Public Health (DPH) to read information of a town and then select the best five oral health promotion programmes to improve oral health of a population in the town. GRAPHIC-IV was developed to enhance aspects of pedagogy and entertainment. The game engine logged the number of submission attempts and the results of the pre- and post-test assessments. After game completion, each student completed a feedback questionnaire. Statistical analysis involved independent t-test of the number of submission attempts between institutions; paired t-test was used to analyse pre- and post-test score differences. Descriptive analysis was used to present the feedback questionnaire data. Ethical approvals were obtained from KCL (BDM/14/15-27) and MU (COA.No.MU-DT/PY-IRB 2015/002.1901).

Results: 151 KCL and 115 MU students used GRAPHIC, of which 146 (96.7%) and 111 (96.5%) respectively completed the game including pre- and post-tests. The average number of attempts for successfully completing students was 6.9 (SD=4.9) for KCL and 15.1 (SD=4.1) for MU ($p<0.001$). Post-test scores were significantly higher than pre- test at KCL [16.7 (SD=2.5) CF 16.2 (SD=2.3); ($p<0.05$)] and MU [17.1 (SD=2.2) CF 16.3 (SD=2.4); ($p<0.001$).

Overall 140 (90.3%) KCL and 109 (94.8%) MU students completed questionnaires: 83 (59.3%) KCL and 55 (50.5%) MU students reported that GRAPHIC could help them understand the content of designing oral health promotion. Although 63 (45.0%) KCL and 38 (34.9%) MU students felt more confident with DPH work, less than one fifth disagreed [25 (17.9%) KCL; 18 (16.5%) MU]. Almost one half of students recommended the development of more scenarios for use with GRAPHIC [65 (46.4%) KCL and 53 (48.6%) MU].

Conclusion: There was a gain in knowledge in students from two learning cultures and there was evidence that the game helped some students with understanding DPH at undergraduate level; however, the use of the game differed in the two institutions.

3413. HEALTH ECONOMICS AND INEQUALITIES AFFECTING OVER-THE-COUNTER VERSUS PRESCRIBING DRUGS IN DENTISTRY

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In 2015, in England, dental prescriptions cost £31.2m, an increase of 19.3% from 2014 (£26.2m), continuing the trend of significant increases since 2012.

Aims: To identify widely prescribed medicines that are available Over The Counter (OTC); to establish the cost savings of obtaining OTC medicines rather than by prescription.

Methods: A review of Health and Social Care Information Centre data was performed to determine the thirty most widely prescribed drugs from the Dental Practitioners Formulary in 2015 that are available as pharmacy only medicines

(P) or general sales list medicines (GSL) and to determine the thirty most prescribed drugs with the highest net ingredient cost (NIC) that are also available as P/GSL. A marginal cost analysis was undertaken of these data. Determinants affecting prescribing habits of dentists were outlined.

Results: The most commonly prescribed drug, that is also a GSL medicine, was chlorhexidine gluconate (CG) 0.2% mouthwash with 174,180 items dispensed in England in 2015, with a net ingredient cost (NIC) of £841,395. This was the 8th most prescribed dental drug in 2015. This was followed by Corsodyl mouthwash 0.2% (brand name for CG 0.2%) in 10th place with 66,874 items prescribed, costing £220,962. Ibuprofen 400mg was the most widely prescribed analgesic which is also available as a GSL/P with 43,641 items prescribed in 2015, costing £47,187. The marginal saving of obtaining ibuprofen OTC in 2015 rather than by prescription was calculated for the consumption of maximum dosage for 4 days for dental pain, with a typical cost of 50p, saved £25,336.82.

Conclusions: There are many medicines which are commonly prescribed which are also available OTC and the cost element of this is a factor all prescribers should be aware of. However, there may be multiple reasons why these medicines are prescribed and decisions should be made on an individual patient basis. Prescribing OTCs for certain patients may be more cost effective when considering the overall benefit to population health.

Session 7

Oral Cancer

3301. DENTAL CONDITION OF ORAL SQUAMOUS CELL CARCINOMA PATIENTS IN A HUNGARIAN POPULATION

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The prevalence of oral squamous cell carcinoma (OSCC) is higher in Hungary than in most other countries. Predisposing factors such as poor oral health are also quite frequent. The aim of this study was to evaluate the oral condition of OSCC patients, tumour free, age and gender matched controls and healthy young controls before the prevalidation of salivary biomarkers.

Methods: Between 1 January 2013 and 31 December 2013, at the University of Debrecen, Faculty of Dentistry, Department of Periodontology, the oral condition of 33 OSCC patients (27 male, 6 female), 30 age-matched tumour free (27 male, 3 female), and 29 healthy young controls (18 male, 11 female) was assessed. Participants provided signed informed consent and the study was given ethics approval from the Ethics Committee of the University of Debrecen. OSCC patients were diagnosed in the Department of Maxillofacial Surgery (Sz.A, R.P), controls were chosen at primary examination office (clinic) and were referred to the examiners (T.I, F.M). Oral examination included panoramic and periapical radiographs and a detailed oral, periodontal charting (Silness- Løe (1964) plaque index (PI), Løe- Silness (1963) gingival index (GI)), and caries charting (localization of caries, fillings, prosthetic devices, canal fillings, roots, missing teeth). DMFT, DT, MT, FT, and DMFS were recorded for all patients. Data were entered into SPSS 22 and statistical evaluation- descriptive statistics involving comparison of variables (ANOVA, and Bonferroni post-hoc analysis) - was performed.

Results: OSCC patients had the following mean scores: PI: 0.8, GI: 1.3, DMFT: 26.4, and DMFS: 119.5. Age- matched OSCC free controls had mean scores of PI: 0.4, GI: 0.6, DMFT: 23.5, DMFS: 100.3. Young controls had mean scores of PI: 0.03, GI: 0.09, DMFT: 4.6, DMFS: 7.8. PI and GI. Values differed significantly ($p \leq 0.05$) amongst groups. For DMFT and DMFS the young controls differed from the other two groups in a significant manner.

Conclusions: These findings are in accordance with previous findings that OSCC patients have a worse periodontal condition than matched OSCC free controls. Periodontopathogenic bacteria may directly stimulate tumour cell growth.

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3341. CLINICAL GUIDELINES AND SYSTEMATIC REVIEWS ON EARLY DETECTION FOR ORAL CAVITY CANCER

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Aim: this overview aims to assess the evidence for best practice concerning methods of early detection / screening for oral cavity cancer (OCC) in primary care dental settings.

Methods: Multiple databases were searched for clinical guidelines and systematic reviews, with no language restrictions. A novel search strategy was developed to include professional organisation/associations websites. The methodological quality of the included records was assessed by at least two reviewers using validated and reliable instruments: AGREE II tool for clinical guidelines; AMSTAR and ROBIS tools for systematic reviews. Reviewers' quality appraisal ratings for the tools were compared and disagreements were resolved by discussion. Data extraction included capturing recommendations and evidence grading scores as recorded in the reviewed articles. A narrative synthesis approach was undertaken to assess the evidence of extracted data, focusing on the themes of: description of the clinical examination, frequency of the assessment, use of adjunct methods, and whether the approach should be population, opportunistic, or targeted based on risk factors; and taking account of the quality appraisal and recency of publication.

Results: 12 systematic reviews and 24 clinical guidelines were identified for inclusion. AGREE II scoring was consistent between the overall quality score and the rigor of the guideline development domain of the tool. Quality scores ranged from 2 to 6 overall, with corresponding domain scores ranging from 3% to 85%. AMSTAR and ROBIS showed good consensus in the reviewers scores, with articles having a high AMSTAR score being rated as "low /unclear" risk of bias in ROBIS. The narrative synthesis showed a lack of use of high level evidence within the clinical guidelines.

Conclusions: The recommendations in the clinical guidelines were based on limited evidence in systematic reviews, and indicated the need for more research in relation to oral cavity cancer early detection/ screening for dental healthcare professionals.

Methods of funding: Supported by: Ministry of Health, Sultanate of Oman.

3348. KNOWLEDGE OF ORAL CANCER RISK FACTORS AMONG LITHUANIANS

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Morbidity of oral oropharyngeal cancer and a lack of knowledge of risk factors is a concern in Lithuania. The aim of present study was to assess the knowledge of oral cancer risk factors among Lithuanians.

Methods: An anonymous pretested 20-item survey was distributed to all patients who were examined in four hospitals of Lithuania during oral cancer prevention events on 2016, February 22-26. The Lithuanian Bioethics Committee stated that approval for the study was not required. The survey included questions about background characteristics, unhealthy behaviours and risk factors for oral cancer. The collected data were analysed using SPSS v21.0. Spearman's rank order correlation, ANOVA tests were used. The significance level was set at $p < 0.05$.

Results: 803 people participated in events of Mouth Cancer Action Week and a convenience sample of 724 completed the survey; response rate 90.2%. Male to female ratio: 1:2.6. Average age of the patients was 57.5 ± 16.6 years. 537 (74.2%) were from urban areas. The majority of respondents had university level education

(n=357, 49.1%). 324 (44.6%) were workers and 334 (45.9%) were pensioners. Patients agreed smoking (86.8%), older age (63%), alcohol consumption (56.3%), sunlight exposure (47.3%), lip and buccal mastication (40%), HPV (33.7%), low consumption of fruits and vegetables (33.1%) were risk factors of oral cancer. Only 18 (2.5%) respondents agreed that they have enough information about oral cancer. The mean knowledge seemed to be medium (3.62 ± 1.86 from a maximum score of 7). Socioeconomic status and alcohol consumption were associated with level of oral cancer primary prevention knowledge ($p=0.02$, $p=0.03$ respectively). Better knowledge was found in patients who receive dental treatment in private clinics ($p=0.005$).

Conclusions: A gap in oral cancer risk factors knowledge was found among Lithuanian patients, preventive programs and educational measures may decrease the prevalence of unhealthy behaviours and oral cavity malignancies.

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3351. ETIOLOGY AND INCIDENCE OF MAXILLOFACIAL TRAUMA AT THE UNIVERSITY OF PÉCS BETWEEN 2011 AND 2015

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The incidence of maxillofacial trauma varies widely between different countries and regions due to a variety of contributing factors, including environmental, cultural and social factors.

Aim: To investigate the etiology and incidence of maxillofacial injuries in all patients treated at the University of Pécs, Faculty of Dentistry between 2011 and 2015. The study included data on gender and age distribution of patients, as well as the cause, localisation and therapy of maxillofacial fractures.

Methods: Patient data were analyzed using the MedSol patient register system used at the University Clinics of Pécs during this 5-year period. Classification of data was performed using ICD-10 codes (International Statistical Classification of Diseases and Related Health Problems) classified by WHO.

Results: The study population of 509 consisted of 389 (76%) male and 120 (24%) female patients. The age group 20-29 years accounted for the largest subgroup. The most common cause of fractures was violence, followed by fall accidents. A total of 705 maxillofacial fractures were treated, 457 (65%) related to the upper 2/3 of the face, while 248 (35%) related to the mandible. The main fracture site of the face was the zygomatic bone (184, 40%) and corpus (body) (71, 29%) of the mandible. Related to therapy, 121 patients with mandible fractures were treated surgically (61%), while 180 maxillofacial injuries received conservative treatment (52%).

Conclusion: Number of patients treated with maxillofacial injuries at the University of Pécs has increased since 2012 with a peak value in 2014. Numbers of violence and fall related injuries significantly increased whereas other causes remained consistent.

3355. MORTALITY BY ORAL AND OROPHARYNGEAL CANCER IN BRAZIL BETWEEN 2000 AND 2013.

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Oral and Oropharyngeal cancers are public health problems in Brazil and Worldwide. Incidence and mortality have changed in Brazil, but the last publication that evaluated time trends in Oral and Oropharyngeal cancer mortality analysed data between 1980 and 2003, prior to the reorganization and expansion in Brazils Public Oral Health network by the National Oral Health Policy of 2004.

Aim: To estimate coefficients and evaluate mortality trends by Oral and Oropharyngeal cancer between 2000 and 2013 in Brazil.

Method: Mortality coefficients were adjusted by sex and age using the direct method, using the Brazilian population of 2010. Mortality data were obtained from the Mortality Information System (SIM) of the Ministry of Health of Brazil and demographic data were extracted from demographic census and intercensal projections of the Brazilian Institute of Geography and Statistics (IBGE). Mortality trends were evaluated by sex, self-reported race/skin color, and age, by anatomical site of tumour and region of the country, using general linear regressions by Prais-Winsten method.

Results: There were 61,190 deaths by Oral and Oropharyngeal cancer in Brazil between 2000 and 2013, of which 48,301 (78.9%) were males. The male/female ratio was of 3.9:1. Oropharyngeal cancer was the most frequent cause of death at 31.7%. Trend analysis revealed that overall mortality by oral and oropharyngeal cancer was stable between 2000 and 2013 in Brazil, with an annual variation of 1.3% (95% CI: -2.6 to 5.3). Stratification by sex revealed a trend of significant increase for females, with an annual variation of 1.8% (95% CI: 0.1 to 3.5). Stratification by cancer site revealed that there was a trend of significant increase in the annual variation of mortality by cancer of the base of the tongue (0.4%, 95% CI: 0.1 to 0.7), and by cancer of the floor of the mouth (0.3%, 95% CI: 0.1 to 0.5). There was a trend of significant decrease in the annual variation of mortality by tonsil cancer (-0.2, 95% CI: -0.4 to -0.1). Stratification by sex and skin colour revealed a trend of significant increase in the annual variation of overall mortality by oral and oropharyngeal cancer for white women (1.2%, 95% CI: 0.6 to 1.7), for brown women (3.4%, 95% CI: 1.5 to 5.4), and for brown men (8.0%, 95% CI: 4.0 to 12.0). There was a trend of significant decrease for black women (-2.6%, 95% CI: -4.8 to -0.4) and yellow men (-26%, 95% CI: -47.6 to -4.4).

Conclusions: There was an important trend of increase in mortality by oral and oropharyngeal cancer for females in Brazil between 2000 and 2013. In addition, there was an increasing trend for base of the tongue and the floor of the mouth.

Methods of funding: Brazilian Ministry of Health.

3365. INVESTIGATING OSCC-SPECIFIC SALIVARY BIOMARKERS IN A HUNGARIAN POPULATION USING TARGETED PROTEOMIC AND IMMUNOLOGICAL METHODS

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Oral squamous cell carcinoma (OSCC) is a major health problem globally. Unfortunately Hungary has one of the highest incidences of OSCC in the world, therefore there is a great need for developing sensitive and specific biomarkers. Saliva has become increasingly important as a biological fluid for the detection of diagnostic and prognostic biomarkers.

Aim: The aim of this study was to identify and validate biomarkers characteristic for OSCC diagnosis in the Hungarian population.

Methods: Ethical approval was obtained from the University of Debrecen Ethics Committee (No. 3385-2011) and the subjects gave informed permission. The study population was formed of 41 patients with OSCC. Twenty four age matched and 10 young healthy volunteers who had no Human Papilloma Virus infection, diabetes mellitus or any autoimmune diseases acted as controls. Fourteen proteins previously identified as potential biomarkers were selected and examined. A targeted proteomics method was developed for catalase, thioredoxin, S100A9, galectin-3 binding

protein, cytokeratin 21, profiling, CD44 and CD59. Their level was examined in saliva samples of OSCC patients, age matched controls and young controls. The level of IL-6, IL-8, IL-1b, IL-1a, TNF α and VEGF was examined in saliva samples using a custom 6plex Milliplex kit. The statistical analysis of mass spectrometry data was performed using MStat software. For cytokine measurement, the U-test was used.

Results: The levels of protein S100A9, thioredoxin, IL-6 and TNF α were significantly altered in

OSCC patients compared to controls ($p<0.05$). A ROC analysis indicated that the combination of S100A9 and thioredoxin (AUC=0.8) and IL-6 (AUC=0.9) may act as potential OSCC biomarkers applicable for the Hungarian population. For validation, the levels of these potential biomarkers were analyzed in 200 saliva samples collected in a multi centric study from the patients of the four University Medical Centers (Debrecen, Budapest, Pecs and Szeged) in Hungary using ELISA.

Conclusions: The results of this study indicate that the combination of protein S100A9, thioredoxin and IL-6 seem to be useful biomarkers for OSCC detection in the Hungarian population.

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3367. DIFFERENCES IN KNOWLEDGE ON ORAL CANCER AMONG PATIENTS WITH PRECANCEROUS DISEASES AND HEALTHY INDIVIDUALS

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Aim: To compare differences in knowledge about oral cancer primary prevention between patients with oral precancerous diseases and healthy controls.

Methods: All patients were asked to participate in the study and fill 20-item pretested questionnaire during Oral Cancer Week events in Lithuania. Questionnaire included items about background characteristics, addictions (smoking, alcohol intake) and knowledge about risk factors. The study was approved by Lithuanian Bioethics Committee (2R- 2149). Data were analysed using SPSS v21.0, statistical significance was set at $p<0.05$.

Results: 803 people participated in Oral Cancer Week events in Lithuania and 83 patients were diagnosed with oral precancerous diseases. Of these 76 completed the questionnaire, a response rate 91.2%. The controls ($n=78$) were randomly selected from the healthy patient group by age and gender. Overall 154 were included into study. Among respondents, average age was 54.4 ± 16.9 . Male to female ratio 1: 3.3. Almost half of patients had a university level education ($n=69$, 44.8%) and were workers ($n=74$, 48.1%). In relation to risk factors, 70 (92.1%) patients with precancerous diseases were aware that smoking causes oral cancer and 6 (7.9%) were smokers, in the control group 69 (87.3%) were aware of smoking risks and 10 (12.7%) were smokers ($p>0.05$). The mean knowledge score (maximum score 11) was 5.3 ± 2.9 among patients and 6.9 ± 2.3 in controls ($p<0.05$). Questionnaire responses showed 39 (51.3%) patients with precancerous disease were aware oral cancer could be treated and 26 (34.2%) indicated oral cancer could be contagious. In controls 28 (35.9%) were aware oral cancer could be treated and 50 (64.1%) indicated oral cancer could be contagious ($p<0.05$). A total of 31 (40.8%) patients considered oral cancer could be prevented while in the control group only 12 (15.4%) supported this opinion ($p<0.05$).

Conclusions: The present study showed that a lack of knowledge is common between patients with oral precancerous diseases and healthy individuals. We suggest an increase of oral cancer primary prevention awareness is necessary to reduce the prevalence of oral precancerous diseases and oral malignancies.

Methods of funding: Vilnius University Hospital Zalgiris Clinic, Vilnius, Lithuania.

3378. INVESTIGATION OF SALIVATION AND ORAL HEALTH STATUS IN HUNGARIAN SMOKING PATIENTS

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Our objective was to assess the minor and major salivary flow rates, the prevalence of xerostomia and related oral and extraoral dryness symptoms, and the oral health status of smoking compared to the non-smoking patients from different age groups in Hungary.

Methods: 901 patients (age: 18-92 years, 376 male (41.7%), 525 female (58.3%), selected according to the current official Hungarian age and residence distribution scheme) were involved. A questionnaire was designed to determine the subjective presence or absence of the sicca symptoms. Unstimulated whole saliva flow rate (UWS) was measured by the spitting method, while palatal (PS) and labial (LS) minor salivary

gland flow rates were collected by the Periotron method. An oral examination was carried out, including dental (DMF-T), periodontal (periodontal probing depth, PPD and the maximum CPI-score) status, plaque-index (Löe- Silness, PI), calculus-index (CI) and gingival bleeding index (Ainamo-Bay, GBI). Data were statistically analysed using χ^2 and the Students t-test at a significance level of $p < 0.05$. This study was approved by the Semmelweis University Regional and Institutional Committee of Science and Research Ethics (No 55/2013).

Results: Smokers were 35.9% (43.4% of the men and 30.5% of the women) of the sample (323 out of 901). Questionnaire data showed 42.7% (156) of the non-smoking women and 28.2% (60) of the non-smoking men, and 41.9% (67) of the smoking women and 35.6% (58) of the smoking men felt xerostomia. A significantly higher number (13 out of 29; 44.8%) of smoking men between the age of 30-40 reported xerostomia compared to the non-smoking men (2 out of 31; 6.5%), respectively. However, no significant difference was shown in either the UWS, or in the minor salivary gland secretions (PS, LS) between smokers and non-smokers in both genders in different age groups. Increased plaque retention (PI non-smoking women: 0.7 ± 0.7 , smoking women: 1.0 ± 0.8 ; $p < 0.05$; non-smoking men: 0.9 ± 0.8 , smoking men: 1.2 ± 0.9 ; $p < 0.05$) could be detected in smokers of both genders, and a significantly higher average probing depth (PPD non-smoking men: 2.3 ± 0.8 , smoking men: 2.6 ± 1.0 ; $p < 0.05$) was measured in smoking men. More calculus (CI) was seen among smokers in the 40-60 and the 60-70 age groups in both genders. There was no significant difference in the DMF-T in the same age groups between smokers and non-smokers.

Conclusions: As in other populations, smoking might cause a significant destruction in the periodontal status of the Hungarian population, but we could not show any influence of smoking on caries. Smoking may also have an effect on the subjective sensation of dry mouth or any other sicca symptoms, however, according to our findings, it does not influence salivary gland function significantly.

3416. ORAL CANCER AWARENESS AND KNOWLEDGE AMONG PATIENTS AT NSU DENTAL CLINIC

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This study aimed to assess the level of the public awareness and knowledge about early signs, symptoms and risk factors of oral cancer among dental patients visiting Nova Southeastern University (NSU) Dental Clinic in Fort Lauderdale, Florida. And second, to correlate the awareness and knowledge levels according to age, gender, ethnicity, education levels and marital status.

Methods: This study used dental patients presenting for routine scheduled appointments at the NSU Dental Clinic (Davie Campus). The data collection was from April through July 2015 and participation was confidential. Inclusion criteria were: patients 18 years and above, consent for questionnaire/survey participation, and ability to read English. Pregnant women and adult patients as a guardian, were excluded. A self-administered modified questionnaire of 26 questions was used to assess awareness and knowledge about Oral Cancer and sociodemographic information. Data entry was done following survey completion. The results of the survey were coded and enter into a database for statistical analysis using crosstabs, and Chi-square test in Jump software.

Results: The number of patients in the study was 338, 50.3% were males and 49.7% females. The ages ranges from 18 to 70+, with the mean age 55.3 years. Of the respondents, 47.3% were white, 29.2% Hispanic and 17% African-American. The majority of the subjects had a College/University education 180 (55%). Participants marital status, 42.2% married, 30% single and 19.5% divorced. A total of 253 (76%) patients stated that they had heard of oral cancer. Family member ($p=0.04$) and TV advertisement ($p=0.01$) were statistically significant for where the patients heard about the subject. Of the respondents, 48.8% did not knew anything about the disease; 45.2% knew a little, and only 6% considered that they know a lot. The risk factors linked with oral cancer identified by males were: smoking ($n=118$), smokeless tobacco ($n=81$), and family history ($n=68$). Females identified smoking ($n=116$), followed by family history of oral cancer ($n=82$), and smokeless tobacco ($n=52$). The early signs of oral cancer identified were sore and bleeding lesions ($n=123$), ulcer ($n=116$), and no idea / don't know ($n=115$) respectively.

Conclusions: Based on this information for this Cohort there is a significant lack of awareness and knowledge about signs, symptoms and risk factors of oral cancer in the general population.

3423. REPORTED INTERNET AND COMPUTER USE AMONG SENIOR DENTAL STUDENTS, TEHRAN

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Computers and the internet has revolutionised all aspects of medicine and dentistry, and internet and social networks are now common among young doctors. The aim of this study was to evaluate information technology (IT) literacy among senior dental students of Tehran, Iran.

Method: A questionnaire was constructed based on previous literature and some researcher- made questions. After checking for reliability and validity, we collected data on self-reported internet and computer use. The ethics committee of Tehran University of Medical Sciences (TUMS) approved the survey. All numerical data were entered and analysed using the Statistical Package for Social Sciences (SPSS version 18). Initial descriptive statistics were expressed as frequency, mean and standard deviation. A regression model served for statistical analysis.

Results: In total 218 questionnaires out of 250 were returned for an overall response rate of 85%. The student score for computer use ranged between 7 and 28 with a mean of 18.6(\pm 4) out of a maximum of 28. Also their score for internet searching ranged between 6 and 24 with a mean of 15.3(\pm 4) out of a maximum of 24. Among students 67% (n=145) searched daily in Medline, 73% (n=160) used search engines such as Google. Most, 81% (n=176) of students had skills in windows, 72% (n=157) in advanced web searching, 77% (n=168) in Microsoft Office software and 16% (n=34) in SPSS. In the regression model we found that internet searching is related to computer use with a relation coefficient of 0.607 among respondents ($p < 0.001$).

Conclusion: Considering the mean scores, senior dental students' IT literacy is not sufficient and most of the students reported the need to gain more searching skills. This suggests more training and providing better infrastructure to promote their IT literacy.