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### Scientific program

#### WEDNESDAY 11th of April

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<td>Gerds T.</td>
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**POSTER SESSION A**

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**Welcome reception**

#### THURSDAY 12th of April

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<td>Leroy R.</td>
<td>Oral Health assessments in adults with special needs - challenges and first results</td>
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10:30 - 11:30  POSTER SESSION B  chair: Lauridsen E.
Poster 7  Arnetzl G.V.  Cognitive Impairment and oral inflammation
Poster 8  Ibiyemi O.  Psychosocial aspect of anterior tooth discoloration among adolescents in Igbo-ora, Southwestern Nigeria
Poster 9  Oktay I.  The effect of fluoride: An evaluation approach
Poster 10  van Wyk F.  Dental Caries Experience of Children in the North West Province of South Africa.
Poster 11  Maslak E.  Dental fear development and associated social factors in young children
Poster 12  Rodionova A.  Oral health and oral hygiene in 24-30-month-children in Volgograd in connection with participation in Dental Health Program

11:30 - 13:00  Session 04  chair: Gerds T.
11:30 - 12:00  Slack-Smith L.  Total-population data linkage and child dental outcomes; examples and advantages for inequality research
12:00 - 12:15  Gunel Karadeniz P.  Validity and Reliability of Turkish Version of The Child Perceptron Questionnaire in 11-14-year-old Children by Rasch Analysis
12:15 - 13:00  Ha D.  Dental surveillance and its contribution to dental public health and research - the Child Dental health Survey in Australia

13:00 - 14:00  Lunch break

14:00 - 15:30  Session 05  chair: Lazar A.
14:00 - 14:45  Mejia G.C.  Measurement issues in population oral health
14:45 - 15:00  Riedl R.  Design issues and analytic approaches in observational studies to reduce the impact of confounding
15:00 - 15:15  Declerck D.  Set-up of an oral health registration and evaluation system for the Belgian population
15:15 - 15:30  Mutsvare T.  Approaches to correct for misclassification in the absence of an internal validation data set

15:30 - 16:30  POSTER SESSION C  chair: Roos Leroy
Poster 13  Ercalik Yalcinkaya S.  Demirjian’s System for estimating dental age among Northwestern Turkish children aged 4-16 years
Poster 14  Ambrositsch G.  The effect of individual stress coping strategies on supportive periodontal therapy - A follow-up over a period of 10 years
Poster 15  Passrucker C.  The orthodontic treatment of palatal impacted canines with special regards to treatment duration
Poster 16  Sfeatcu R.  Social nicotine dependence and periodontal condition: a study of two groups of Romanian dental students
Poster 17  Heschl A.  Cross-arch fixed partial dentures in patients with periodontally compromised maxillae
Poster 18  Zhang S.  Discrete choice experiment investigating people’s preferences for dental prosthetic treatments in replacing upper anterior missing tooth: A pilot study

16:30 - 17:30  Session 06  chair: Gilthorpe M.
16:30 - 16:45  Vähänikkilä H.  The quality of reporting statistics in five dental journals
16:45 - 17:00  Brignardello-P. R.  Methods for data analysis in split-mouth trials- a simulation study
17:00 - 17:30  Leroux B.  Statistical Methods for Practice-Based Dental Research

19:00 - 22:00  Conference dinner
### FRIDAY 13th of April

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<tr>
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<tr>
<td>09:00 - 09:45</td>
<td>Krummenauer F.</td>
<td>Designing and Sizing Population Based Investigations in Oral Health Research: a trade-off between project efficiency and significance of results</td>
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<td>Fisekcioglu E.</td>
<td>Is DMF-T A Sufficient Measurement For Caries Risk Profile Of The Population?</td>
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<tr>
<td>10:30 - 11:30</td>
<td>Pop-Jordanov N.</td>
<td>An analysis of the postgraduate orthodontic education in the European Union</td>
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<td></td>
<td>Nur B.</td>
<td>Comparison of Orthodontic treatment need in the seven different region of Turkey</td>
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<td>Comparison of the orthodontic information of the original and modified oral health assessment form</td>
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<td>Ibiyemi O.</td>
<td>Oral Habits and Tooth Wear Lesions among Adult Males in Igbo-Ora, Southwestern, Nigeria</td>
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<td>Wendl B.</td>
<td>Shear bond strength of brackets with different enamel etching</td>
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<td>Muchitsch A.</td>
<td>Comparison of angle- and distance measurements on geometric bodies using laser scan- and electronic methods</td>
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Pre Conference Workshop
April 10 - 11

Assessment of error in population oral health studies
Mejia Gloria C., Ha Diep H.
Australian Research Centre for Population Oral Health
School of Dentistry
The University of Adelaide, Australia

In order for health researchers to describe the health status of a population, compare disease levels among subgroups, or study the interrelationships between health and socio-demographic factors it is necessary to obtain information from the population of interest. Studies based on a sample of the target population will unavoidably involve some degree of error. Errors can affect the precision (reliability) or the validity of the estimates. Sampling errors occur by chance, depend on the sampling strategy and can be measured statistically. Non-sampling errors arise at any stage of the survey, other than during sample selection, and are difficult to measure and control. One common error that can bias estimates is due to non-participation in the survey. Therefore, it is important to recognize the potential for biased survey estimates and to include strategies to try to measure the extent and the direction of error in order to correctly interpret any study result.

This workshop will cover basic aspects of sampling and non-sampling errors in population oral health surveys and will present strategies to identify, control and assess bias during the study design and analysis of data.

Program

April 10
14:00-15:00 Introduction: Errors in population oral health studies Small group activity:
Sampling and Non-sampling errors
15:00-15:30 Declining participation rates (presentation)
15:30-16:00 Break
16:00-16:30 Participants divide into small groups to estimate survey participation rates based on example
16:30-17:00 Summary and general group discussion on participation rates

April 11
09:00-10:00 Assessment of bias (2): Use of population indicators – correlations, measures of effect, and standardization. Estimation and discussion of method by small groups followed by general group discussion
10:00-11:00 Assessment of bias (3): Use of imputations. Estimation and discussion of method by small groups followed by general group discussion
11:00-11:15 Break
11:15-12:30 What’s next? Group activity, discussion and feedback
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The Dental Trauma Guide: a population based Internet risk calculator

T.A. Gerds¹, E.F. Lauridsen²,³, S.S. Ahrensburg³ and J.O. Andreasen³

Background/Aim
The successful outcome of a traumatic dental injury requires adequate initial treatment and post-traumatic monitoring. Prediction tools are increasingly used to improve early diagnostics, guide interventions and inform patients about the expected outcome. Advanced statistical methods are used to provide unbiased predictions of healing complications based on long-term follow-up studies.

Material and Methods
The Internet risk calculator at the Dental Trauma Guide provides prognoses for teeth with traumatic injuries based on the Copenhagen trauma database: http://www.dentaltraumaguide.org. The database includes 2191 traumatized permanent teeth from 1282 patients that were treated at the dental trauma unit at the University Hospital in Copenhagen (Denmark) in the period between 1972 and 1991. Subgroup analyses and estimates of event probabilities were based on the Kaplan-Meier and the Aalen-Johansen method.

Results
The Internet risk calculator shows individualized prognoses for the short and long-term healing outcome of traumatized teeth with the following injuries: concussion, sub-luxation, extrusion, lateral luxation, intrusion, avulsion, crown fractures without luxation, root fractures and alveolar fractures. The prognoses for pulp necrosis, pulp canal obliteration, infection related root resorption, ankylosis, surface resorption, marginal bone loss and tooth loss were based on the tooth's root development stage and other risk factors at the time of the injury.

Conclusions
In this talk we motivate the clinical situation, describe the data base, the functionality and the statistical approach of the Internet risk calculator.

¹ Department of Biostatistics, Faculty of Health Sciences, University of Copenhagen
² Department of Pediatric Dentistry and Clinical Genetics, School of Dentistry, Faculty of Health Sciences, University of Copenhagen
³ Centre of Rare Oral Diseases, Department of Oral and Maxillo-Facial Surgery, Copenhagen University Hospital
A retrospective study on dental complications after conservative therapy of isolated fractures of the alveolar process in the permanent dentition

Marotti M. (1), Ebeleseder K. A. (2), Wegscheider W. (3)

(1+2) Division of Preventive and Operative Dentistry, Endodontics, Pedodontics, and Minimally Invasive Dentistry, Department of Dentistry and Maxillofacial Surgery, Medical University Graz, Austria, (3) Division of Prosthodontics, Restorative Dentistry, Periodontology and Implantology, Department of Dentistry and Maxillofacial Surgery, Medical University Graz, Austria

A common location of fracture of the alveolar process is the anterior region of the maxilla or of the mandible. Affected teeth are characterized by mobility of the alveolar process. Several teeth typically will move as a unit when mobility is checked. Fractures of the alveolar process usually affect older age groups. The primary etiologic factors are fights and automobile or bicycle accidents. Treatment of fractures of the alveolar process includes repositioning and immobilisation. The most common complications are pulp necrosis associated with periapical inflammation, pulp canal obliteration, root resorption and loss of supporting bone.

Until now, only two studies, describing the success rate of the healing of isolated fractures of the alveolar process and the complications of the involved teeth, have been published.

The aim of this retrospective study was to report the dental complications after fractures of the alveolar process. Special attention was paid to the surviving rate of the involved teeth by the criteria loss and vitality. 93 patients aged 7 to 59 years were treated in the years 1990 to 2006 at the University Dental Clinic in Graz. In the year 2010 they were called to a clinical and radiological follow-up to which 37 patients representing 38 alveolar fractures and 103 involved teeth responded.

The fracture line involved the alveolar socket with 93 teeth (90,3%), where also concomitant dental injuries like root fracture (10,7%), complicated crown fracture (7,8%) and avulsion (10,7%) were found. After a mean observation period of 6 years, ranging from 1,5 to 14 years, 8 teeth (7,8%) were lost, pulp necrosis was observed in 51,4%, pulp obliteration in 22,3%, loss of marginal supporting bone in 13,6% and external root surface resorption in 4,8% of the involved teeth.

In conclusion, compared with the previous studies the survival rate of the involved teeth and of the pulp was higher. Although, this study emphasised the need for a careful follow-up in order to register the pulp necrosis, which was the most common dental complication.

References:
Extended Cox Regression Model for the Analysis of Dental Implant Failure


(1) Department of Statistics and Operations Research, School of Mathematical Sciences, Tel-Aviv University and Private dental practice, Tel-Aviv, Israel.
(2) Department of Periodontology, School of Graduate Dentistry, Rambam Health Care Campus, and Faculty of Medicine, Technion, IIT, Haifa, Israel.
(3) Maxillofacial Prosthodontics Unit, Dept. of Oral & Maxillofacial Surgery, Sheba Medical Center, Israel.
(4) Private Periodontal practice, Kfar-Saba, Israel.

Introduction: The Cox Proportional-Hazards regression model is a popular option to assess the effect of prognostic factors on survival. The main assumption underlying the model is the Proportional Hazard (PH) assumption. This assumption means that Hazard Ratio (HR) is constant over time. Additionally, the model assume that independency exist between the units of analysis. The aim of this report is to demonstrate the use of an extended Cox regression model for the analysis of dental implants' data set, which is characterized by violation of these two assumptions.

Data set: The data set was obtained from a retrospective cohort study design which consisted of 2,336 dental implants performed in 736 patients. Followed-up time was up to 144 months. The main explanatory variable was periodontal status (healthy, moderate and severe chronic periodontitis) and the outcome variable was time to implant failure.

Statistical methods: Life tables and Kaplan-Meier analyses were applied in order to describe the outcome variable. In order to estimate Hazards ratios with regard to periodontal status, we first examined the PH assumption by the Grambsch-Therneau test and by plots of the scaled Schoenfeld residuals. These tests raveled a clear violation of the PH assumption; therefore an extended model was created by defining a new variable (Heaviside function at 50 months of survival) and including an interaction term between the new variable and periodontal status. Furthermore, a robust standard errors method was utilized in order to account for possible correlation between implants in the same patient.

Results: The Cumulative Survival Rate (CSR) at 108 months was 0.96 and 0.95 for implants inserted to healthy and moderate periodontitis patients, respectively. The CSR declines to 0.88 at 108 months for the severe periodontitis group. The extended Cox model demonstrated that severe periodontitis (compared to healthy patients) does not relate to a greater Hazard for implant failure up to 50 months, however, turn out to be a significant risk factor at 50 months after implant insertion with HR=8.06 (P<0.01).

Conclusions: The extended Cox model is a viable statistical tool for the analysis of data sets obtained from long term implants study, when violation of the PH assumption and intra patient correlation do exist.

Periodontal patients are at greater risk for implant failure, but this is observed only after several years of function.
Estimating the Intra Cluster Correlation in Dental Implants Research

Ofec R.(1,2), Steinberg D.M.(1), Schwartz-Arad D.(3)
(1) Department of Statistics and Operations Research, School of Mathematical Sciences, Tel Aviv University, Tel Aviv, Israel.
(2) Private dental practice, Tel-Aviv, Israel.
(3) Schwartz-Arad Surgical Center, Ramat Hasharon, Israel.

Introduction: Data sets in dental implants research are often organized in clusters, with several implants within a patient. It is reasonable to assume that clustered data will have correlated responses, a phenomenon known as Intra Cluster Correlation (ICC). Marginal bone loss (MBL) around implants is a common success criterion during the lifespan of dental implants. Researchers and clinicians often claim that "Ailing implants come in clusters" but this has not yet been statistically proven. The aim of the study is to estimate ICC (\(\rho\)) with regard to MBL. The null hypothesis that \(\rho = 0\) is tested.

Data set: The study was based on the analysis of a clustered data set obtained from a dental implants cohort study. A total of 195 patients with 721 dental implants was followed for up to 147 months. Implant status was a binary variable with the categories: acceptable and advanced MBL.

Statistical methods and results: Three raw estimators for ICC were calculated. \(\hat{\rho}_A = 0.31\) is based on an ANOVA table, \(\hat{\rho}_p = 0.27\) is based on the correlation between all pairs of observations, and \(\hat{\rho}_{FC} = 0.31\) was introduced by Fleiss & Cuzick and is similar to the kappa statistic for agreement among judges. A 95% Confidence Interval (C.I.) for \(\rho_{FC}\) is [0.18-0.45]; therefore we can reject the null hypothesis. Stratifying our data by gender, smoking status and function time revealed higher ICC among: women, smoking patients and implants with function time > 3 years.

Estimators for ICC adjusted for explanatory variables at the patient and implant level were also calculated. A mixed logit model with patient as the random effect revealed a latent association of 0.49 with 95% C.I. equal to [0.33-0.65]. Therefore, unmeasured patient characteristics might explain 49% of the propensity of an implant towards MBL. From the same model we obtained a manifest association of 0.29 with 95% C.I. equal to [0.16-0.43]. Therefore, implant status (acceptable or advanced MBL) can explain 0.29\(^2\) \times 100 = 8.4\% of the variability of another implant status of the same patient. Furthermore, we demonstrate an increased odds ratio by a factor of \(\approx 5\) for an implant to exhibit MBL in subjects who have already one ailing implant, compared to subjects who have only successful implants.

Conclusion: Moderate correlation does exist among implants of the same patient. The study results support the common knowledge that "ailing implants come in clusters", hence, clinicians are advised to be cautious when they clinically find the first ailing implant within a patient who have several implants. The assumption that implants of the same patient are correlated should be adopted as standard practice during the statistical analysis phase; otherwise the validity of results is questionable.
Using pyrosequencing high-throughput method for human oral microbial communities identification

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Human body is populated with microorganisms that coexist in symbiosis with the human cells. But only certain areas, ecological niches are suitable for microbial cells and one of them is the oral cavity. Our mouth plays an important role in the overall health and therefore identification of the microbial communities and their interaction with the human cells is an important task for many future research studies. All the microorganisms in the human oral cavity, or so called oral microbiome comprise over 600 prevalent taxa at the species level[1]. Only approximately 280 bacterial species have been isolated and cultivated. Therefore other molecular technologies with culture-independent approaches have been developed with the latest breakthrough of next generation sequencing introducing high-throughput possibilities for identification and quantification of microbes. An overview on all high-throughput methods available for analysis of human oral microbiome can be found in [2].

In microbiome projects data analysis becomes a critical part, because of the high-throughput technology used, apparently high pyrosequencing error and possibility of PCR artefacts generation. Hence many different tools for microbiome analysis exist(for example [3], [4], [5]), where several standard steps are present: a) trimming, quality filtering and chimera check of raw sequence data; b) clustering and OTUs (operational taxonomic unit) identification; c) taxonomic classification; d) sequence alignment of representative OTU reads and e) comparison of microbiome communities.

Here we present pyrosequencing method in combination with bacterial DNA fingerprinting using PCR amplicons of a variable 16s rRNA gene region and broad-range primers. For this purpose bacterial characterization on ten human oral biofilm samples from a pilot project was done using Roche GS FLX Titanium sequencer.

For the analysis of the generated sequencing data the software platform QIIME [3] was used, enabling comparison of the microbiome communities between the samples.

References
Interactions between putative periodontal pathogens and caries associated species

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Aim: To investigate the relationship between putative periodontal pathogens and caries associated bacteria.

Materials and Methods: A total of 958 fixed sites in 87 young cases of periodontitis and 73 young control subjects were sampled for subgingival plaque and investigated for the occurrence of putative periodontal pathogens (Aggregatibacter actinomycetemcomitans; Porphyromonas gingivalis; Prevotella intermedia; Prevotella nigrescens; Tannerella forsythia; and Treponema denticola) and species that have been considered to be associated with higher or lower risk for experiencing caries (Actinomyces oris; Streptococcus intermedius; Streptococcus mutans; Streptococcus oralis; and Streptococcus sanguinis) using the Checkerboard DNA-DNA hybridization technique. The relations between the different microbial species at the sampled sites were investigated for all subjects using graphical plots and multilevel mixed-effects linear regression analysis adjusting for the sampled site level and case status. Results: No association, either positive or negative was found between A. actinomycetemcomitans and S. mutans (β Coefficient=0) or any of the caries associated species investigated. The counts of P. gingivalis and T. forsythia were statistically significantly positively associated with the counts of S. intermedius (0.87 and 0.66), S. oralis (0.52 and 0.31), and S. sanguinis (0.43 and 0.24). The counts of P. intermedia and P. nigrescens were statistically significantly positively associated with the counts of S. intermedius (1.65 and 1.98), S. mutans (0.26 and 0.29), S. oralis (0.85 and 1.05), and S. oralis (0.65 and 0.72).
An apparent antagonism between carrying putative periodontal pathogens and caries associated bacteria was not found. These findings challenge previously reported results from in vitro studies suggesting an inhibitory effect of streptococcal species on selected putative periodontal pathogens (e.g., S. sanguinis on P. intermedia) and an apparent inhibition of S. mutans in subjects presenting with A. actinomycetemcomitans.

Conclusions: The study demonstrates a significant positive relationship between subgingival counts of selected putative periodontal pathogens and selected caries-associated bacteria at the site level independently of case status.
Bacterial transmission from mother to child: a multiple correspondence analysis as a method of visualisation

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In Finland, a state-wide network of maternity and child welfare clinics has been in operation for decades. Services including health checkups, vaccinations, and personal counselling are available for all and are free of charge. Nearly all expecting mothers and children under school age attend these clinics.

Aim: To assess the transmission of oral bacteria from mother to child and related behaviour of Finnish mothers at maternity clinics.

Method: The study population (n = 313) comprised mothers with children under three years attending two municipal maternity clinics in Finland. A self-administered questionnaire assessed mothers’ behaviour related to the transmission of oral bacteria from mother to child (i.e. sharing a spoon when feeding their child and kissing on the lips). In addition to mothers’ ages and educational levels, the questionnaire enquired about mothers’ tooth brushing and smoking habits. The relationships between the background factors and the mothers’ behaviours were visualised using multiple correspondence analysis [1] and further analysed with logistic regression models, odds-ratios (OR) and their 95% confidence intervals (95%CI).

Results: Of the mothers, 38% kissed their child(ren) on the lips and 14% shared a spoon when feeding their child(ren); 11% believed that oral bacteria cannot be transmitted from mother to child. As many as 68% of the mothers reported brushing their teeth twice daily, whereas 29% and 3% of them brushed their teeth daily or less; 13% and 7% of the mothers reported regular or occasional smoking, respectively. Of the mothers, 12% had a basic, 51% a vocational and 37% a higher level of education. Multiple correspondence analyses revealed differences in education levels, tooth brushing and smoking habits with respect to the mothers’ behaviours (kissing on the lips and sharing a spoon). These behaviours were related to each other, which was also evident in the logistic regression models. In the model for the kissing-on-lips behaviour, the most striking factors were the spoon-sharing behaviour (OR 9.9, 95%CI 4.2-23.5) and, inversely, the higher level of education (OR 0.5, 95%CI 0.3-0.8). Similarly, in the model for the spoon-sharing behaviour, the most striking factors were the kissing-on-lips behaviour (OR 10.3, 95%CI 4.3-24.4), the higher level of education (OR 3.1, 95%CI 1.3-7.6), and, inversely, older age (OR 0.1, 95%CI 0.03-0.6). Separate multiple correspondence analyses suggested that the different effects of education (OR 0.5 vs. OR 3.1) might also be related to the mothers’ vocational level, which served as the reference group in the models.

Conclusion: Multiple correspondence analysis proved useful for visualising the health behaviours of mothers and their young children as well as for supporting the interpretations of logistic regression analyses. The mothers’ behaviour regarding bacterial transmission to their children was related to various interconnected factors such as education, tooth brushing, and smoking habits.

Measures of predictive ability for survival data: a review and application to clustered data

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To appreciate the quality of a survival model, it is important to evaluate its predictive ability in addition to the statistical significance of the model predictors. A variety of predictive measures have been proposed for independent survival data. We discuss the concordance measure and the Brier score.

The concordance measure was introduced by Harrell et al. (1982) and quantifies how consistent the predicted survival times separate the subjects according to the observed survival times. More specifically, the correlation between the ranking of the predicted survival times and the ranking of the observed survival times is determined for a randomly chosen pair. The prediction error, or the Brier score, was introduced by Graf et al. (1999) and further developed by Gerds and Schumacher (2006). For a given survival model and subject population, the average difference or loss between the observed failure time and a given predictor of the failure time is determined. As such, the prediction error can be seen as an overall performance measure of the survival model. Both measures will be illustrated on the well-known German Breast Cancer data set.

During the second part of the presentation, predictive measures will be presented that are especially adapted to clustered survival data. In this respect we show the extensions of the concordance measure and the Brier score to frailty survival models. Properties and estimators of both measures will be shown and both measures will be applied to a dental data set evaluating the quality of amalgam restorations.

References
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Personalized Oral Health Care Based on Subgroup Methodology

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Investigators of modern comparative studies, particularly in oral health, often collect baseline data for a multitude of purposes, including for subgroup analysis, which explores whether there is evidence that the treatment difference depends on certain patient characteristics. Usually the objective of these modern studies is to make inference about an “overall” treatment difference with respect to efficacy, where the results from a positive study implies that all future patients will be treated with the new therapy (or standard therapy for a negative study result). The truth may indicate that the therapy is more effective (less effective or more harmful) for certain subgroups of patients than is indicated by the “overall” treatment difference. Understanding such heterogeneity of treatment effects would allow investigators to tailor oral health treatments according to characteristics of an individual patient. This talk will provide an overview of subgroup approaches designed to evaluate treatment-effect heterogeneity, including Subpopulation Treatment Effect Pattern Plots (STEPP), Multivariable-Fractional Polynomial Interactions (MFPI), and Johnson-Neyman. Examples will be provided to illustrate how applying multiple analytic approaches can be useful for assessing the stability of the study results, which may improve the value of the results for individual patient decisions.
The prevalence of periodontal diseases among the adult population with low socio-economic status in Baku, Azerbaijan

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Recent studies in an adult population in Hungary [1], Denmark [2] and elderly subjects in France [3] have reported different prevalence of periodontal diseases. Different factors can influence prevalence including socio-economic status (SES) [4] and income [5]. Studying the epidemiology of periodontal diseases enables the assessment of its prevalence, helps to determine peoples’ need for dental care and informs the development of prevention and treatment programmes. There have not been comprehensive epidemiological studies of periodontal diseases in Baku in modern time. In country’s such as Azerbaijan, that are experiencing rapid economic development, there is the possibility of funding such programs in the near future, once the relevant epidemiological data have been produced.

Aim: The aim of this study was to assess the prevalence of periodontal diseases among the adult population of Baku with low socio-economic status.

Methods: Home-based and at work place dental examinations were performed on 681 adults (of whom 338 were men and 343 were women) from the age groups: 15-19 years, 20-29, 30-39, 40-49, 50-59, 60 and older were held among all of whom resided in Baku city. The subjects were workers and unemployed people with low incomes. The WHO 1997 criteria were used for diagnosis and recording periodontal status, using a visual method with mouth mirrors, periodontal probes and daylight illumination. Student's t-test was applied.

Results: Results demonstrated an average gingivitis prevalence of 20.5±1.52 %. There were most often persons with inflammatory form of gingivitis (19.8±1.52 %). Prevalence of periodontitis made 16.7±1.40 % (chronic periodontitis and aggressive, early onset periodontitis). In both cases (gingivitis and periodontitis) prevalence increased with age. There were most people with early form of periodontitis (10.28 %), than others (6.4%). The population prefers will remove a moving teeth, than to treat periodontal problems.In general the subjects exhibited very low motivation for undergoing the dental treatment and a poor level of hygiene.

Conclusions: The study demonstrated a high prevalence of periodontal diseases among Baku’s population with low socio-economic status. The need to develop a program aimed at improving the dental health service provided for those from the lowest SES in Baku.

References
Oral Health assessments in adults with special needs – challenges and first results

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Background & aim: Currently, data on the oral health status of adults with disabilities residing in Belgium are scarce. Hence, the National Institute for Health and Disability Insurance (NIHDI) ordered a study to assess the oral health status and oral care needs in this focus group. Material & methods: As there is no official database that comprises the target populations, an ad hoc method had to be applied to select a random sample of adults with disabilities that would reflect the actual target population as well as possible. The oral health examinations were carried out between April and September 2010. Teeth were examined using a disposable dental mirror and periodontal probe (Perio 11C, HS 1004057). The dentists wore a head lamp to improve visibility. Calibration of examiners was not feasible in this focus group. X²-tests and Kruskal-Wallis Tests were performed in order to evaluate statistical significance of observed differences between subgroups. Results: In general, the facilities’ readiness for participation was limited; nevertheless 707 adults with various types of disabilities were recruited, of whom 51 did not give permission for an oral examination. In 467 (78%) and 407 (68%) participants dental plaque and calculus were observed; in only 82 (19%) participants the periodontium was considered healthy. However, in 25 (4%) participants the assessment of the oral hygiene level at tooth level was not feasible and in 227 (35%) participants periodontal health could not be assessed. In 343 (56%) participants untreated caries lesions (D3>0) were observed, indicating that more than half of participants were in need of treatment of dental caries. Fifteen (25%) participants who had an edentulous maxilla and 11 (30%) participants who had an edentulous mandible had no prosthesis. Similarly: 47% and 39% of those with only 1-4 teeth in maxilla and mandible respectively and 63% and 53% of those with only 5-8 teeth had no replacement of missing teeth. Furthermore, evaluation of the cleanliness of the removable dentures (n=195) disclosed that on 108 (55%) prostheses an accumulation dental plaque and on 67 (34%) prostheses calculus was detected. Conclusions: The present study illustrates the huge unmet oral treatment needs in adults with disabilities. At the same time, many methodological problems were encountered when performing oral health screenings in this population: absence of an official database, limited willingness to participate, discrepancy between the high demands of the ethical committee regarding the informed consent and the limited intellectual capacities of the participants (and many guardians), impossibility to organize clinical calibration sessions in this focus group, behavioral problems and lack of cooperation during examinations that limited the examination time, inability of the weakest individuals to participate which may bias results.
Total-population data linkage and child dental outcomes; examples and advantages in inequality research

Professor Linda Slack-Smith

Abstract
Many studies in oral health rely on small samples or suffer from bias. Total-population data linkage offers exceptional opportunities for research in dentistry. The advantage of population data linkage, from an epidemiological perspective, is that it is not biased and no-one is excluded. This has important implications for human rights because generally the people who are excluded from studies or not retained are the most marginalised. There are a number of places in the world that have high quality population data linkage in the area of health including Oxford, Aberdeen, Rochester, Manitoba and Scandinavia. In Western Australia, there is a unique set of linkable databases on the entire population which include detailed information on all births and hospital admissions (including dental admissions) since 1980 (approximately 30,000 births per year), linkable with many other datasets. Completion of the Midwives’ Notification Form regarding each birth is mandatory. We can now link birth and hospital admissions with population databases for characteristics such as intellectual disability and birth defects. This has permitted extensive investigation of children having hospital admissions for dental diagnoses inclusive of those who may be disadvantaged. It is even possible to link Commonwealth Government data with State Government data. We have linked birth defects data and midwives data with data from the Commonwealth Pharmaceutical Benefits Scheme, which may detect potential associations between medicine use in pregnancy and birth defects including cleft lip and palate. Findings from research to date will be considered along with opportunities using such data.
Objective: The Child Perception Questionnaire (CPQ_{11-14}) is a self-report instrument developed to measure oral-health-related quality of life (OHRQoL) in 11-14-year-old children. The aim of this study is to evaluate validity and reliability of Turkish Version of CPQ_{11-14} by using Rasch Analysis.

Material Methods: Seventy five children between 11-14 ages who attended Department of Pediatric Dentistry in Dental School Marmara University in 2011 were included in this study. The children were selected randomly. The CPQ_{11-14} form was translated into Turkish and then back translation was performed and a pilot study was conducted. According to the pilot study, three questions were revised slightly just to adapted Turkish colloquial language. The children filled out the final CPQ_{11-14} form. They also filled out the face scale (with six faces) about subscales of CPQ for determining convergent validity by calculating Pearson correlation coefficient. The construct validity of the CPQ_{11-14} data was assessed by using Rasch Analysis. The Rasch model ensures the unidimensionality of a scale (health related quality of life questionnaire). The Rasch model mean square fit statistics have an expected value of 1.00 and acceptable interval is 0.60 and 1.40. The item/person separation is represented by two calculations; item/person separation index and reliability. Both person and item separation indices are acceptable when they are greater than 2.00. The separation reliability score ranges between 0 and 1, larger values indicate a greater ability to distinguish between strata of person ability or item difficulty. The unpaired t-test was also applied to compare the means of upper and lower 27 percentages of children’s CPQ_{11-14} scores to show item validity. The children completed the CPQ_{11-14} in the first appointment before dental examination. Two weeks later, the CPQ_{11-14} form (n=29) was given to fill out again in order to assess the test-retest reliability by paired t-test. Cronbach’s $\alpha$ coefficient was calculated for internal consistency. Data were analyzed by SPSS 17.0 and by Winsteps 3.65.

Results: 75 children’s ages were 12.41±1.00. 39% of the children were girls and 61% of them were boys. According to Rasch Analysis, item separation index was found as 2.87 and item reliability was 0.89; item infit range was 0.17 – 2.18; and item outfit range was 0.01 – 6.93. According to “27 percent rule”, there was also a significant difference between the upper and lower 27 percentages of children’s CPQ_{11-14} scores to show item validity. The children completed the CPQ_{11-14} in the first appointment before dental examination. Two weeks later, the CPQ_{11-14} form (n=29) was given to fill out again in order to assess the test-retest reliability by paired t-test. Cronbach’s $\alpha$ coefficient was calculated as 0.924.

Discussion: The internal consistency of the questionnaire was satisfactory depending upon Cronbach’s $\alpha$. The result of paired t-test between the first visit and the second visit was insignificant because of short duration between visits; this can be explained as the perception of the children holds still on at the second visit after two weeks. It is expected that the children will be more satisfied due to being examined completely after three months because the questionnaire ask all the items essentially for the past three months. Therefore, it is recommended to apply CPQ_{11-14} after three months of the dental treatment to detect the possible change in the child perception.

Item validity was performed according to “27 percent rule” that means the questionnaire can distinguish upper and lower item total scores. Pearson correlation coefficient between CPQ_{11-
scores and face scale scores was relatively high. Nevertheless, we think that face scale is a rough tool to perform convergent validity but lack of other alternative validated and reliable Turkish scales in this subject, we obliged to use it.

According to Rasch Analysis, the results of item separation index, item reliability were acceptable. The most questionable items were 6th and 7th items, infit and outfit measures of these items were outside of the acceptable interval. The problem belonging to these results may also arise due to small sample size as a limitation of our study.

**Conclusion:** CPQ_{11-14} is an important tool to assess children’s oral health related quality of life. It can be said that the Turkish version of the CPQ_{11-14} is a reliable and valid questionnaire. However, further research is necessary for the confirmation of these results in larger populations.
Dental surveillance and its contribution to dental public health and research – the Child Dental health Survey in Australia

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Dentistry shares an interest with public health in using surveillance data to: (1) assess the oral health of the population; (2) to define dental public health priorities; (3) to evaluate public health policies and programs; and; (4) to identify emerging problems and research priorities. In Australia, the longest standing and most extensive surveillance activity in dentistry has been the Child Dental Health Survey (CDHS), which has been conducted through the school dental services of the states and territories since the mid-1970s. This survey has monitored the burden of dental decay in children and adolescents, identified variations between geographic regions and age cohorts, and provided data for evaluating the school dental services. Hence the CDHS has played a significant role in planning dental public health programs and served as a platform for research activities.

Firstly, the contribution of this surveillance and research activity to dental public health planning is illustrated by the work assessing the effectiveness of water fluoridation in preventing oral disease in children in Australia. The data collected by the CDHS, have compared the oral health status of children living in non-fluoridated Queensland with that of children in other fluoridated states. The former constantly had higher dmft/DMFT scores than states with high coverage water fluoridation. For example, in 1989, mean dmft among Queensland 5–6 years old children was 2.19 compared to 1.87 in South Australia and 1.14 in the Australian Capital Territory. This work has been further expanded by research to evaluate the association between dental caries experience and percentage of lifetime exposure to water fluoridation, and consequently has led to extension in the coverage of water fluoridation in Queensland.

Secondly, the data from the CDHS have allowed the time trend of caries experience to be examined and analysed. The analysis of the time trend of caries experience among Australian children since the 1970s demonstrated a significant improvement in child dental health as well as the fluctuation between decades.

Thirdly, scientific research activities have constantly been developed based on the CDHS data. An example of those activities was the analysis of the time trend of socioeconomic inequality in child oral health. This has been possible by collecting further sociodemographic data in addition to the CDHS clinical data. The analysis demonstrated that income-related inequality was evident in the Australian child population. Furthermore, there was a widening in income-related inequality in deciduous caries experience after a decade.

These examples illustrate the importance of surveillance data and the need to both maintain and strengthen the existing surveillance activities to improve useability of those activities.
Measurement issues in population oral health

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Measurement is a key aspect of population oral health. The types of measures used depend on the purpose, nature of the data, and conceptualization of the phenomenon. The purpose of population health is to maintain and improve the health of the entire population. Therefore, the type of data and measurement of outcomes needs to refer to the population level.

The present discussion will focus on (1) the measurement of the object of study: the event, disease or condition at the level of the population, and (2) associations or magnitudes of effect central to population health. The main aim is to examine the problems of quantifying oral health outcomes and estimating measures of effect within the population health framework.

The first part of this talk uses data from South Australian preschool and school-aged children attending the school dental services during 2007. We compare different caries case definitions, contrast measures of caries experience at the cavitated and non-cavitated level, and describe a first attempt at using prevention as the theoretical underpinning for measuring outcomes. Our results highlight the impact of threshold selection; the disease profile of the population varied from approximately 10% to 60% of the population identified as a case depending on the measurement used. The population distribution of disease was very similar when caries was measured at the cavitated and non-cavitated level. Longitudinal data indicated that between 70% and 80% of non-cavitated lesions in the primary dentition and up to 90% in the permanent dentition remained the same at follow up. These findings question including non-cavitated lesions in disease definitions of dental caries for population studies.

The second part uses data from Australia’s National Survey of Adult Oral Health, 2004-2006, to examine measures of strength of association between social determinants and oral health outcomes. Nearly 26% of Australian adults (15+ years old) had untreated coronal decay, with prevalence ranging from 19% to 35% in the highest and lowest income groups respectively. The prevalence of at least one tooth missing due to pathology was 64%, ranging from 87% in the lowest to 56% in the highest income group. The income distribution of the population ranged from 28.8% in the highest and 14.5% in the lowest income group. We examine measures of effect in a population attributable to the distribution of determinants and highlight the importance of understanding the population distribution of exposure and the estimates of disease within levels of exposure. Finally, we argue in favor of measures that support population health approaches as opposed to those that promote identifying high risk individuals.
Design issues and analytic approaches in observational studies to reduce the impact of confounding

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In clinical research randomized controlled trials (RCT) as well as observational studies are used to estimate the effects of treatments and exposures on health outcomes. To ensure that the estimate of treatment effect is not influenced by confounding factors, a random allocation of the subjects to the treatment or control group is one of the most important design techniques for avoiding bias in RCTs [1]. State-of-the-art randomization is performed e.g. using web based systems like the “Randomizer for Clinical Trials” (www.randomizer.at) where various randomization methods are implemented. Different methods are needed in observational studies where randomization is not feasible. At the design stage matching methods (frequency matching, individual matching) can be used to reduce the impact of confounding. Stratification and multivariate adjusted analysis are model-based approaches.

In the talk the role of randomization in experimental studies will be discussed and examples using the “Randomizer for Clinical Trials” will be shown. Furthermore, an overview of different design issues and analytic approaches, commonly used to control for confounding in observational studies will be presented. Special focus is given on propensity score based techniques, frequently used in cohort studies. In case-control studies, the propensity score, however, is less common. Therefore, we conducted a simulation study to investigate the performance of several matching methods in combination with regression adjustments in the estimation of the association of exposure and disease based on case-control data.

References
Set-up of an oral health registration and evaluation system for the Belgian population


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The collection of information regarding the health condition, health related behaviours and care consumption profiles of a population is essential for an efficient planning of care delivery and optimal allocation of resources. To this end, health interview surveys and health examination surveys have been developed in several countries. These cover different aspects of health, including oral health. The aim of this contribution is to present the development and implementation of an oral health registration and evaluation system for the Belgian population. The overall objective of this oral health data registration system is to present an accurate picture of the oral health status and treatment needs of Belgian inhabitants.

Based on the results of a feasibility study undertaken in 2006-2007, a first round of data collection was organised in 2008-2010. Sampling of Belgian inhabitants took place following the methodology used for the national Health Interview Surveys (organised by the Belgian Scientific Institute for Public Health). Using a stratified cluster sampling technique based on the Belgian National Registry (with household as primary sampling unit), a sample of 2536 households was obtained. From these, 1330 households agreed to participate yielding a total of 3057 participants (≥ 5 years old). Informed consent was obtained from each of these subjects.

Participants were visited at home by a dentist-interviewer and were invited to complete a validated questionnaire and to undergo an examination of the oral cavity. For this purpose, a team of 48 dentists received training and was calibrated. The validated questionnaire covered socio-demographic information (age, gender, nationality, educational level,...), oral health related habits (oral hygiene, dietary habits, dental attendance,...), presence of oral complaints and oral health related quality of life items. The clinical examination included a wide range of variables: presence of dentofacial anomalies, level of oral hygiene, periodontal condition, tooth wear, developmental defects of enamel, caries experience, presence of restorations, prosthetic status,... For each of these variables, existing standardized criteria were used, in most cases identical to the EGOHID recommendations. Dentist-examiners recorded all information and forwarded the results to the central office. For entering data from the oral health examination, an on-line tool was developed.

In addition, information on selected items regarding dental and medical care consumption registered by the Inter-Mutualistic Agency (IMA) were retrieved and linked to the data collected by the dentist-examiners. For this purpose, a complex procedure needed to be developed in order to comply with requirements issued by privacy protection regulations.

In this contribution, the set-up of the whole project will be outlined and problems and challenges encountered during its development and implementation will be highlighted. Experience obtained in the Belgian situation might be relevant for other parties interested in or engaging in the set-up of a national health data registration system.
Approaches to correct for misclassification in the absence of an internal validation data set

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When in a regression analysis the response and/or the covariates are measured with error, the estimated relationship is distorted. We consider here the case of a binary outcome which is prone to misclassification. To correct the regression analysis for misclassification, several methods have been suggested in the literature. Optimally a large enough internal validation data set (random sample of the main data) should provide the necessary correction terms. However, it may be challenging to obtain internal validation data in practice. Rather, external validation data sets are usually available. External validation data may differ in many ways from internal validation data. Different approaches are possible to make use of the obtained external validation sample to correct for misclassification in the main data. We focus here on the approach which resembles best what happened in our motivating data set obtained from the Signal Tandmobiel study. The approach is to correct for differential misclassification in the main data by conditioning the misclassification probabilities on a rich structure of covariates (if available) such that the external validation data come closer to the internal. We explore the relationship of various factors and caries experience in children of age twelve by a multilevel model. This approach is related to the use of propensity scores when correcting for imbalance in observational studies.
The quality of reporting statistics in five dental journals

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Background: Statistical methods play an important role in medical and dental research. In earlier studies it has been observed that current use of methods and reporting of statistics are responsible for errors in the interpretation of results.

Objective: To investigate the quality of reporting statistics in dental research articles.

Methods: A total of 200 articles published in 2010 were analyzed covering five dental journals: Journal of Dental Research, Caries Research, Community Dentistry and Oral Epidemiology, Journal of Dentistry and Acta Odontologica Scandinavica. Every paper underwent careful scrutiny for the correct use of statistical methods and reporting. A paper with at least one poor reporting item or statistical error has been classified as “misused statistics”, and a paper without any statistical errors as “acceptable”.

Results: Our investigation showed that 60 (30 %) papers were acceptable and 140 (70 %) papers contained at least one poor reporting item or statistical error.

Conclusions: Misuse rate 70 % is little bit higher than that reported by several studies completed for the medical literature. This may be by reason of stricter definitions of the poor reporting than in other papers. The authors of dental journals might apply these results to improve the statistical section of their research articles and to present the results in such a way that it is in line with the policy and presentation of the leading dental journals.
Methods for data analysis in split-mouth trials- a simulation study

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Objective: To determine the impact of each of the methods used and proposed in the literature to analyze data from split mouth trials of continuous outcomes in the treatment effect estimates, mean square error, confidence interval width, confidence interval coverage, power, and type I error.

Methods: a simulation study was performed. We used different parameters to resemble a superiority two-armed split-mouth randomized clinical trial assessing the effect of two active interventions in patients with chronic moderate periodontitis. Two factors were varied: 1) the method of data analysis and 2) underlying study characteristics. We analyzed the data using the unpaired t-test, paired t-test, Wilcoxon signed test, Wilcoxon rank-sum test, analysis of covariance (ANCOVA), mixed effects model (MEM), and generalized estimating equations (GEE). In addition, we analyzed the data using the different approaches described to analyze pre-post data, and we analyzed full data (considering all measurement per patient), and collapsed data (obtaining a mean per side per patient). We used different treatment effects (probing depth reductions from 0 to 1 mm), correlations between pairs of teeth (weak, moderate or strong correlation), number of teeth per split, and number of patients. We made all the decisions to generate the data based on published literature and clinical experience. The simulations were done using the program R. The outcomes of interest were the bias in the point estimate, the mean square error, the confidence interval coverage, the confidence interval width, the power and the type-I error rate of each method.

Results: all methods were unbiased across scenarios (mean bias 0, SD<0.01). All the other outcomes depended on the correlation among the data. When the correlation among the data was weak, all methods performed similarly; however, some differences could be observed when the correlation among the data was moderate or strong. The power was higher for the methods that considered the pairing of the data. In general, these methods had nominal type-I error rate and confidence interval coverage, and narrower confidence interval width.

Discussion: the methods that accounted for the paired nature of the data performed better than the ones that ignored it. This is a theoretical approach based on assumptions; therefore, as long as those assumptions hold, the results will be applicable. An inappropriate data analysis may lead to misleading results and erroneous conclusions; it raises ethical concerns and it would not allow taking advantage of the split-mouth design. Nevertheless, when the treatment effects are those likely to be considered clinically important, all methods perform similarly and none would lead to incorrect conclusions. We only investigated continuous outcomes, so there is room for further research regarding other types of outcome and using other assumptions.
Practice-based research networks present several challenges for study design and statistical analysis. In particular, patient-level data from multiple dental practices or clinics may exhibit correlation between outcomes for patients in the same practice and/or geographical correlation between practices. Furthermore, when outcomes are recorded at the tooth or site-level within patients, multi-level correlation structures may need to be considered. In this talk I will describe some of the useful types of study designs for practice-based research including cluster-randomized and cluster-crossover designs. The interesting design and analysis issues that arise with these designs will be presented as well as some possible solutions.
Designing and Sizing Population Based Investigations in Oral Health - a trade-off between project efficiency and significance of results -

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**Purpose:** Standards for the designing of population based investigations have recently been summarized in the GEP (Good Epidemiological Practice) guidelines [1]. One consequence of these is to specify sample size and budgets as crucial success determinants of epidemiological investigations regarding their naturally large overall size and multicentric nature. This presentation seeks to summarize these consequences on sample size and budget projection for population based investigations in oral health.

**Material and Methods:** Methods for the calculation of sample size have been developed in the context of clinical trials, but cannot be straightly transferred to epidemiological research: whereas for clinical trials inclusion and exclusion criteria usually imply small data variation in the investigation’s primary endpoint, population based studies usually intend heterogeneity to ensure representative data. The resulting large interindividual data variation, however, implies notable sample sizes for epidemiological trials, and any other source of data variation (for example, due to attenuation or instrumental measurement error) needs to be controlled for instead [2]. Bearing in mind, that patient-related questionnaires on oral quality of life such as the OHIP form are construct-validated, but suffer from limited test-retest reliability and – at least in long-term intervention settings such as in orthodontics – from attenuation effects, the necessary data variation reduction implies a sensitive choice of patient-related endpoints here.

A second problem arises from the lack of “pilot data” as a standard tool for sample size calculation in clinical trials: usually population based investigations cannot introduce any valid quantitative planning information into sample size calculation, because the effort for “representative pilot studies” can hardly be justified in the population based research setting.

These uncertainties in trial size directly transform into economic uncertainties for the trial: note that a population based investigations’ cost profile results from the quality assurance investments due to GEP (such as data validation, primary endpoint monitoring etc) plus the direct costs for patient assessment with the latter being proportional to sample size.

**Results:** The concept of adaptive interim analyses [2] is adapted to the setting of population based investigations to allow for the specification of sample sizes under severe uncertainty and the re-calculation of sample size based on the resulting “medium sized study sequence”. If the initial study sequence shows much larger effects than expected, the investigation can be stopped with a significant finding; if it shows moderate – although encouraging – effects, a second study sequence can be designed based on the first study sequence’s data. Subsequent study parts can then be combined in terms of a formal meta-analysis by means of their respective adaptive confidence intervals. One main advantage of this approach is the possibility of using the “pilot” data in the final evaluation phase (and thereby the justification of the effort to install pilot investigations in population-based research).

The milestone approach [3] for budget sizing can then be applied and will be demonstrated alongside the budget projection of a two-arm cohort design on the comparative prognostic evaluation of root canal post supported versus conservative restauration after endodontic therapy [3]. For this standard cohort trial design a budget size of 1.6 Mio € will be estimated as a consequence of GEP related requirements on quality assurance and trial infra structure.
**Conclusion:** The recommendations of GEP (Good Epidemiological Practice) provide both instructive and challenging requirements for the planning phase of population based investigations in Oral Health Research. The appropriate choice of primary endpoints as well the determination of the investigation’s budget size are crucial determinants of success.

**References**


Is DMF-T A Sufficient Measurement For Caries Risk Profile Of The Population?

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Background: This study is a part of an oral health surveillance analysis project, being conducted on 3040 people from 2009-2010.

Aim: The aim of this study is to assess distribution of caries frequency based on age groups.

Material and method: Main sample group of the survey was determined with stratified proportional random sampling strategy from different cities and their rural areas in Turkey (Sample power95%). People were examined by three calibrated dentists with Q-Optics Radiant Light System Headlight having 91500 lux power by using plane mouth mirror and probe after teeth were dried with cotton rolls. Lesions were diagnosed and distinguished by visual and tactile criteria. Six degrees were recorded on the basis of EGOHID (European Global Oral Health Indicators Development) forms.

Results and conclusion: In all age groups, dmft and DMF-T were calculated. According to these findings, in the age group of 30-39 years old DMF-T was 7.55. We examined the distribution of caries risk frequency in this age group. The percent of people with non–caries was 3.5, between 1.0-4.99 DMF-T was 38.33, 5.0-9.99 DMF-T was 30.4, 10.0-14.99 DMF-T was 15.8, 15.0-19.99 DMF-T was7, 20.0-24.99 DMF-T was 2.8, 25+ DMF-T was 2.2. This distribution was statistically significant for this age group. We found out the similar results for all the age groups. The mean of DMF-T does not represent exactly the distribution of caries risk. We should consider that caries risk frequency in order to plan an oral health promotion programme. Besides, this distribution provides detailed information about community risk profile.
Review and Recommendations for Zero-inflated Count Regression Modeling of Dental Caries Indices in Epidemiological Studies


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Over the past five to ten years, zero-inflated count regression models have been increasingly applied to the analysis of dental caries indices (e.g., DMFT, dfms, etc). The main reason for that is linked to the broad decline in children's caries experience, such that dmf and DMF indices more frequently generate low or even zero counts. We specifically review the application of zero-inflated Poisson and zero-inflated negative binomial regression models to dental caries, with emphasis on the description of the models and the interpretation of fitted model results given the study goals. Our review finds that interpretations provided in the published caries research are often imprecise or inadvertently misleading, particularly with respect to failing to discriminate between inference for the class of susceptible persons defined by such models and inference for the sampled population in terms of overall exposure effects [1, 2, 3]. Recommendations are provided to enhance the use as well as the interpretation and reporting of results of count regression models when applied to epidemiological studies of dental caries.

References


The evaluation of periodontal diseases in epidemiological surveillance analysis


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Background
This study is a part of an oral health surveillance analysis project, being conducted on 3040 people from 2009-2010. In this poster the data has been analyzed a new evaluation approach in respect of oral health research methodology. This study describes the clinical attachment loss and the measurement of community periodontal index (CPI) in an adult Turkish population and performs a risk assessment of demographic, behavioral and environmental exposures.

Material & Method
Main sample group of the survey was determined with stratified proportional random sampling strategy from different cities and their rural areas in Turkey (sample power 95%). 737 individuals, aged over 35 years old, were examined by a single calibrated periodontist. Diagnosis was carried out with aid of the Q-Optics Radiant Light System Headlight having 91500 lux power. Periodontal disease was diagnosed by a Hu-Friedy Williams Probe. Clinical attachment loss was measured on the 6 sites of all teeth, excluding third molars. The measurement of CPI was recorded on the index teeth (11, 16, 17, 26, 27, 31, 36, 37, 46, 47).

Results
A total of 14.10% of the young adults had at least one site with clinical attachment loss > 3 mm compared with 68.35% the adult seniors, respectively (p<0.05). When we collated these data with CPI scores, we found out that a total of 2.61% of the young adults with CPI 4 score compared with 13.68% the adult seniors. According to the findings of regression analysis, clinical attachment loss between 0-8 mm was detected in different scores of CPI. Thus, solitary use of CPI scores was found out insufficient to categorize the periodontal disease.

Conclusions
A population-based strategy that includes the establishment of prevention and health promotion programmes, targeting high risk groups is highly desirable for controlling the high occurrence of attachment loss in our population.
Evaluating agreement between examiners in multilevel settings with covariates

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Reliable and accurate observations are of primary importance in dental research, for example to assess the presence of caries experience or the extent of a periodontal disease. Calibration exercises are therefore used to assess the level of agreement between examiners and/or between repeated examinations by the same examiner in epidemiological surveys or large-scale clinical studies. In particular, to determine how to improve agreement, the effect of covariates (prognosis factors, predictors, risk factors) on the agreement levels needs to be studied.

Kappa-like coefficients (intraclass kappa, Cohen’s kappa or weighted kappa) are usually used to assess agreement between or within examiners when independent units are observed on a categorical scale (e.g., presence or absence of caries experience). However, one particularity of dental research is the presence of multilevel data, i.e. observations made on units nested in clusters. For example, observations are often taken at multiple sites in the same patient (e.g., on each tooth surface of a patient), risk factors can be defined at site or subject levels (e.g., type of tooth, subject’s age) and studies often have repeated measures over time. The classical kappa-like coefficients are no longer valid in multilevel settings because observations made on units within a cluster are not independent from each other.

We therefore extended classical kappa-like coefficients to multilevel settings, through an innovative model-based approach accounting for the correlation between observations. In particular, the developed Bayesian methodology, based on Generalized Linear Mixed Models, permits to directly relate kappa-like agreement coefficients to a set of covariates, defined at various levels of the hierarchy and thus to directly assess the impact of a covariate on the agreement coefficient. This will help researchers to improve agreement levels between and within examiners by first identifying factors influencing agreement coefficients and then by changing covariate values and improving the training of the raters whenever possible. The proposed method was initially developed to study the effect of prognosis factors (e.g., type of tooth, child’s age) on the agreement between pairs of dental examiners assessing the presence of caries experiences in the mouth of children (Signal Tandmobiel® study).
Semi non-parametric multilevel modelling: application to periodontal epidemiological survey data from Kenya

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In oral health research, clustered data are abundant and methods such as multilevel modelling may be used to accommodate or exploit inherent data hierarchy. Standard approaches adopt a continuous latent variable for the upper-level variation, and often assumes to have normally distributed residual variance. There are instances, however, where this is too restrictive and it is useful instead to adopt a categorical latent variable that avoids parametric assumptions for the upper-level variation – this yields a semi non-parametric multilevel model because upper-level variation has no parametric distributional form. We illustrate the improved statistical rigour and practical advantages of this approach using periodontal survey data from Kenya. The Kenyan study sought to describe the clinical parameters of periodontal destruction and involved three examiners. These data formed a 3-level hierarchy: multiple site measurements nested within teeth grouped by individual. Clinical attachment level (CAL) was modelled in relation to both fixed and random effects for a host of socio-demographic and other clinical variables. Adopting a standard continuous latent variable for the subject gave rise to poorer fitting models compared to when a discrete latent variable was adopted because: (i) CAL possesses an excess of zeros that skews the distribution of the subjects’ mean CAL; and (ii) variability amongst examiners occurred in their assessment of CAL, especially around the 0/1 mm threshold, which leads to a mixture of population-level distributions for CAL. In addition to improved model fit, inherent data complexity was meaningfully revealed through features of a multilevel latent class structure. Non-parametric multilevel modelling is therefore shown to be a useful extension to standard multilevel modelling for examining data where standard distributional assumptions of the upper-level residual variance is no longer tenable.
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The „puffed cheek method“ to evaluate mucosal thickness: a methodological study

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Objectives: Mucosal thickness should be considered in implant treatment planning. Needle probing to measure mucosal thickness is invasive and therefore not used in routine diagnosis. The “puffed cheek” method is an established technique to visualize the vestibule in computed tomography (CT). As CT assesses bone availability, a simultaneous mucosal thickness measurement would be useful. Aim of this study was to evaluate the reliability of mucosal thickness measurement in CT with distended cheeks.

Materials and Methods: The thickness of buccal maxillary mucosa was evaluated in 11 patients at four measurement sites. Each site was evaluated via computed tomography with cheek distension and needle probing.

Results: The mean clinical thickness was 1.17 mm (± 0.31) compared to 1.11 mm (± 0.31) in CT evaluation. The mean difference between the two methods was 0.07 mm (±0.40 ;CI-0.14;0.12, p=0.88, K α=0.38). According to Bland-Altman diagram the mucosal thickness may diverge by up to 0.9 mm from the radiologic thickness.

Conclusions: The two measurement methods may not be interchangeably used. A pre-operative soft tissue analysis at most implant sites may be done by CT with distended cheeks, as additional information to three dimensional bone analyses. Nevertheless this method yields less valid and reliable results than the gold standard.
Sinus floor augmentation with bovine bone marrow combined with concentrated autogenous stem cells: a prospective randomized clinical trial

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Background: Autogenous bone, with its osteogenic, osteoinductive and osteoconductive properties, is still considered the ideal grafting material by many surgeons (Hallman & Thor 2008). However, donor site morbidity is a major problem accompanying bone–harvesting techniques. Seeding bone substitutes with mononuclear stem cells (MSC) may result in bone formation comparable with bone formation in regions augmented with autogenous bone solely. Bone marrow aspirate concentrated with a chair side centrifuge could help to avoid donor site morbidity and time-consuming and expensive cell proliferation procedures in a lab.

Aim: Evaluation of new bone formation after applying a concentrate of autogenous bone marrow stem cells on a bone substitute. It is hypothesized that a bone substitute with bone marrow concentrate could decrease healing time and increase bone formation compared to the bone substitute alone.

Materials and Method: In this randomized, controlled study with splitmouth design 7 patients providing a highly atrophic maxilla (residual bone height < 3mm) requiring bilateral sinus augmentation and implant treatment were included. At the randomly selected test side a concentrate of bone marrow stem cells (isolated chairside with a centrifuge, BMAC®) harvested from the iliac crest was added to the bone substitute (Bio Oss®). At the control side the bone substitute (Bio Oss®) was used alone. Approximately 2ml from the bone marrow aspirate was checked for MSC quality and content. Biopsies for histomorphometric analysis were taken navigated (ExpertEase® System) 3 and 6 months (during implant insertion) after sinus augmentation. The percentage of new bone formation in the two groups as well as the increase of new bone over time was evaluated. 6-8 Xive implants were placed in each patient using the ExpertEase® System for guided implantation. OPTG and CT scans for 3D planning and measurements of volume stability of the augmented sinuses were taken preoperatively, 1 day and 6 and 12 months after sinus augmentation.

Results: 60ml bone marrow aspirate was harvested from each patient. After centrifugation a concentrate of mesenchymal stem cells of about 4ml was added to the bone substitute. After 3 months the test group showed less bone regeneration (7.45% ± 4.08) than the control group (11.89% ± 6.02). After 6 months both groups showed similar bone regeneration values (test group 13.53% ± 5.29; control group 13.95% ± 8.45). The data of the test group were statistical significant after 3 and 6 months (p=0.003). In both groups the implants could be placed with primary stability.

Conclusion: In this study a bone marrow concentrate of mesenchymal stem cells seeded on BioOss® had no beneficial effect on bone regeneration compared to BioOss® alone. Various influencing factors have to be analysed.
Use of the Oral Health Impact Profile (OHIP) in clinical oral implant research: position-fixing and implications for the future

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The Oral Health Impact Profile (OHIP) is the most comprehensive and widely used instrument to measure oral health-related quality of life (OHQoL) currently available [1]. Originally it consists of 49 items organized into 7 subscales (functional limitation, physical discomfort, psychological discomfort, physical disability, psychological disability, social disability and handicap) and responses are based on a Likert scale [2]. In reviewing the current literature, the use of OHIP in the field of clinical oral implants research was evaluated. Of 39 studies identified, 15 used the short version OHIP-14 (38%), 7 used the OHIP-20 (18%), 13 used the full version OHIP-49 (33%) and 4 used the version for edentulous patients OHIP-EDENT (10%), while modified OHIP versions were used in another 2 studies. Further differences were seen regarding outcome definitions used (categorized vs. added evaluation) [3]. The majority of investigations (72%) used the OHIP to assess OHQoL in edentulous patients, while only few studies looked at partially edentulous patients (5%) or patients with tooth agenesis (5%). However, investigation often lack within-patient comparison of pre- vs. post-treatment conditions as well as inclusion of negative controls. Although reference values have been suggested [4], reliable conclusions may only be drawn from comparative effectiveness research. Future studies may use the OHIP more frequently and accurately to gain further knowledge on the impact of oral implant treatment on OHQoL.

References


Findings during endodontic intervention after traumatically caused pulp necrosis: a retrospective study in 200 teeth

K.A. Ebeleseder, S. Cepic

Study aim: After dental trauma often endodontic treatment is necessary. In this retrospective study the reasons for and the findings during endodontic intervention were evaluated.

Mat& Meth: From the dental trauma database at the department of conservative dentistry a sequence of 200 teeth which had sustained pulp necrosis and received endodontic treatment was selected. The following circumstances were registered: type of injury, time between injury and endodontic intervention, clinical and radiographic symptoms of pulp necrosis, clinical appearance of the extirpated pulp, tactile estimation of root canal length and apical diameter.

Results. In 49% of all teeth the dental hard substance but only in 12% the periodontal ligament was intact. The average time between injury and endodontic intervention was 4 months. From the four leading signs of pulp necrosis (discoloration, negative sensibility test, clinical signs of pulp infection and periapical radiolucency in the radiograph) in 1% of all teeth one, in 25% two, in 57% three and in 17% all four signs could be found. The consistency of the pulp was similar to that of a vital one in 39% and subjectively without smell in 69%. In 25% exudation into the root canal was seen after pulp extirpation. Tactile estimation of working length was correct in 59%. The diameters of instruments used most frequently in the endometric radiograph were ISO 80 (35 x), 60 (26 x) und 70 (22 x). In 54 teeth the diameter was larger than ISO 80.

Conclusion. Pulp necrosis after dental trauma is clinically asymptomatic in most cases. Nevertheless it is easily detectable. Macroscopic signs of bacterial invasion into the pulp are often missing as well as apical exudation. Endometric measures cannot be replaced by tactile working length estimation. Large instrumental diameters are often necessary.
First Results of a minimally invasive surgical approach for treatment of Bisphosphonate associated jaw necrosis

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Background:
Bisphosphonate associated jaw necrosis is a rare but often severe adverse side effect of BP therapy. Thus far, no consensus in treatment has been achieved. Recommendations range from strictly conservative management including antiseptic rinses and antibiotics¹² to extended surgical interventions up to entire jaw resection and subsequent reconstruction³. All strategies have deal with the insecure prognosis as well as with the danger of reappearance of bone exposure and progression of disease. Extended jaw resection has been reported to be successful.⁴ Nevertheless, regarding the fact of bisphosphonate deposit in the entire jaws the risk for development of further clinical apparent necroses at other sites should be considered. A sequel of several resections may thus lead to severe functional and esthetical restrictions that can compromise a patient’s quality of life.

Aims:
The objective of the presented ongoing study is to design a stage related surgical treatment regimen and to evaluate the success of minimally invasive surgical treatment of Bisphosphonate associated jaw necrosis I and II according to the regimen. Success was defined as stable condition of healed soft tissues and absence of clinical symptoms.

Methods:
After proper anamnesis and clinical staging patients presenting BRONJ are set on the treatment regimen relating to symptoms as well as primary disease and medical history. All Patients receive routine conservative treatment. Patients presenting BRONJ III are either referred to the Department of Maxillofacial Surgery for surgical therapy or are set on palliative conservative therapy. Patients presenting BRONJ I and II are either set on palliative conservative therapy or treated by surgery according to the developed regimen. Patients undergo a strict postoperative care protocol. The effectiveness of surgical therapy is evaluated.

Results:
Thus far 15 patients presenting BRONJ stage I and II underwent surgery. In 14 cases mucosal closure could be achieved. The recall period ranges from 1 to 12 months.

Conclusion:
BRONJ is a complex disease pattern. Treatment outcome prognosis is influenced by various factors including progress of disease and medical concomitants. The primary goal of therapy is to ensure best patient quality of life giving priority to treatment of primary disease.

² Marx Oral & Intravenous Bisphophonate-Induced Osteonecrosis of the Jaws, Quintessence 2007
Rarefaction curves and principal coordinate analysis (PCoA) of 454 pyrosequencing data for comparison of subgingival biofilm samples

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Background and aim: Reproducible and efficient biofilm sampling in the human oral cavity is a challenging task. Rather than using saliva as sampling medium, our policy is to collect the biofilm directly from gingival crevices with paper points. We tried to develop a reproducible sampling method yielding biofilm in sufficient amounts for 454 pyrosequencing analysis. The present study used bio-informatic methods to analyze the pyrosequencing data thus obtained.

Material and Methods: Samples were taken from 5 children aged 8 to 10 years. Two paper points were simultaneously inserted into each of 8 subgingival sites, thus yielding two comparable samples pooled from 8 points each. The procedure was repeated after 1 minute, so that 2 × 2 paired samples of each patient were available for analysis and mutual comparison. Following extraction of DNA, microbiome community profiles of the biofilm were determined using 454 pyrosequencing of V5 and V6 hypervariable regions of 16sRNA. The final step was to perform bio-informatic analysis of FASTA sequence files based on the Quantitative Insights Into Microbial Ecology (QIIME) software platform, which allows analysis of high-throughput community sequencing data [1].

Results: After quality filtering and sequence trimming, 163,050 sequences were left for microbiome studies. Rarefaction analysis was applied to compute species richness giving the number of species as a function of sequences obtained. Four samples showed deviating rarefaction curve progressions in comparison with the remaining samples. Principal coordinate analysis (PCoA) was used to visualize genetic similarities and dissimilarities in 3D plots based on hierarchical clustering, which was accomplished using distance matrices calculated with Unifrac. PCoA revealed a grouping of the first run of paired samples on phylum level. Surprisingly, a large distance was seen in the second run of paired samples both between themselves and compared to the first run. Differences in the PCoA were not consistent with the differences in the rarefaction curves.

Discussion: We were able to extract amounts of DNA for efficient 454 pyrosequencing analysis, and QIIME software allowed us to fully analyze sequence data from FASTA files. We were also able to assess species richness in rarefaction analysis and to demonstrate genetic correlation of the samples on phylum level by PCoA. Going down to family or genus level will involve more complex computations. The observed differences indicate problems in the reproducibility of subgingival biofilm sampling. A larger sample and additional statistical analysis will be required to assess the difference found for its level of significance. One problem will be the huge sequence quantity against the background of a small sample size.
Cognitive Impairment and oral inflammation

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Aim Although the number of teeth and inflammation has been reported to be associated with cognitive function in elderly populations with dementia, little is known about this association. We evaluated the relationship, between number of teeth, BOP PGU and mOHI, in Austrian populations. 73 men and 336 women living in long term care facilities were recruited. The mean age of the whole study population was 84.1 +/- 7.9 (range: 61.4 – 103.7)

Methods All examinations were made by the same dental surgeon; he was equipped with a photolight lamp to achieve maximum visibility within the mouth, a dental mirror, a CPTIN probe and a probe. The results were based on the number of teeth, bleeding on probing, basic periodontal examination and modified oral health index. Dental examinations were performed in all subjects, along with the Mini-mental state examination (MMSE) for assessing cognitive function.

Results Among the total of 409 subjects, the mean MMSE score was 18.2 +/- 10.1, and 167 subjects scored 25 or higher. The population of all participants retained on average 4.9 teeth (men 7.1 teeth, women 3.7 teeth). 48.3% (men 54.8%, women 41.3%) were dentate and had on average 9.9 teeth (men 12.8 teeth, women 8.8 teeth). MMSE:0-18 :4.6 +/- 7.1 (range 0-26) n= 161 MMSE: 19-24: 4.6 +/- 5.6 (range 0-26) n= 81 MMSE 25-30 3.9 +/- 6.8 (range 0-26) n= 167 The average state of oral hygiene was evaluated according to the modified oral hygiene index (mOHI) on a 5-point scale from 0 to 4 (men 2.3, women 2.5) MMSE:0-18 :2.6 +/- 1.3 (range 0-4) n= 161 MMSE: 19-24: 2.7 +/- 1.2 (range 0-4) n= 81 MMSE 25-30 :2.2 +/- 1.2 (range 0-4) n= 167. 84.1% of the participants were found to have acute periodontal inflammation (men 80%, wo- men 85.3%)(BOP). MMSE:0-18 : 91.0 +/- 9.4 (range 0-100) n= 161 MMSE: 19-24: 76.1 +/- 11.9 (range 0-100) n= 81. MMSE 25 -30: 77.5 +/- 12.3 (range 0-100) n= 167 The basic periodontal examination showed an average of 1.9 in men and 2.2 in women (PGU). MMSE:0-18 : 2.4 +/- 0.6 (range 0-4) n= 161 MMSE: 19-24: 2.0 +/- 0.7 (range 0-4) n= 81. MMSE 25 -30: 1.6 +/- 0.6 (range 0-4) n= 167

Conclusion There continue to be increasing numbers of dentate and edentulous elderly with dementia. Patients with dementia often have high levels of untreated oral and periodontal inflammation as well as poor oral hygiene. The prevalence of severe oral inflammation is high in nursing home residents who are severely cognitively impaired. It is therefore likely that cognitive impairment in dementia patients is accompanied by an inability to perform adequate oral hygiene an to communicate dental symptoms. The results of this study suggest that there is a link between dementia, oral and periodontal inflammation. Larger clinical long term RCTs are required to confirm evidence of this study.
Psychosocial aspect of anterior tooth discoloration among adolescents in Igbo-ora, Southwestern Nigeria

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Background
Aesthetic problems in adolescence can have a significant effect on their psychosocial development. Abnormalities in tooth color can lead to such problem especially if it affects anterior teeth.

Objective
This study therefore assessed the effects of anterior tooth discoloration on the psychosocial well being of adolescents with a view to providing information that will aid the prevention and treatment of this dental problem.

Materials and methods
This study was a cross-sectional study involving 384 adolescents aged between 10 and 20years in Igboora southwestern Nigeria. Twenty-six item semi-structured questionnaire comprising variables on demographics and psychosocial effects were researcher-administered. Oral examination of the labial surfaces of the anterior permanent teeth was carried by two examiners. Frequencies and mean were generated. Chi-square and Fischer’s exact tests were used to test associations between categorical variables at (P≤0.05).

Results
The mean age of participants was 14.7±2.3 years. Ninety four (24.5%) participants perceived that their anterior teeth were discolored, 65 (69.1%) of these did not like the discoloration. Sixty two (65.9%), 47 (50.0%) and 38 (40.4%) respectively reported that it prevented them from freely answering questions, smiling and interacting. After oral examination, 120 (31.2%) subjects had one form of anterior tooth discoloration. The cause of tooth discoloration in the majority 64 (16.7%) of the participants was due to extrinsic stains from compounds incorporated into plaque and calculus. Age group, sex, class of participants and presence of tetracycline stained teeth were significantly related with reported psychosocial problems (P≤0.05).

Conclusion
About one third of adolescents had anterior tooth discoloration and the majority reported one form of psychosocial problem.

Keywords: Psychosocial, Anterior tooth discoloration, Adolescents
The effect of fluoride: An evaluation approach

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Aim: The aim of the study was to determine the effect of fluoride on caries incidence rate in different caries risk groups.

Methods: The data were collected from experimental and control town chosen by cluster sampling. Students were 7, 8, 9, and 10 years of age. There were 73, 88, 75, 69 students in test group 70, 61, 68, 77 students in control group according to age groups respectively. The children were examined at baseline and in middle and at the end of the 5-year follow-up by three calibrated dentists by using a plane mouth mirror and probe. Visual-tactile measures were used for the diagnosis in all groups. The children were divided to low-medium and high risk groups depending on the distribution of baseline caries frequency. Children in the test groups used 0.2 % NaF rinse weekly. In the test groups, children with high caries risk also brushed under observation three times a year with 1.1 NaF gel. Student’s t test and factorial analysis were used for the statistical evaluation.

Results: The distribution of baseline dmfs and DMFS values were not statistically significant. In the low-medium caries risk groups, caries incidence rate (surface) were 1.64, 2.44, 2.17, 2.85 in control groups and 0.84, 1.18, 1.22, 1.58 in test group according to age groups respectively for 3. year examination. Same values in the high risk groups were 3.28, 5.33, 4.84, 7.35 in control groups and 2.45, 2.79, 2.70, 3.22 in test group according to age groups respectively for 3. year examination. In the low and medium caries risk groups, caries incidence rate were 2.68, 3.32, 3.0, 3.91 in test groups according to age groups respectively for 5. year examination. Same values in the high risk groups were 3.43, 3.74, 5.1, 6.0 in control groups and 1.98, 2.22, 2.58, 2.36 in test groups for 5. year examination. In all groups caries incidence rate were statistically significant between test and control groups. Another important result was that caries incidence rate was significantly different between medium and high risk groups both test and control.

Conclusion: Results show that, fluoride effect is dissimilar between different risk groups. The mean of caries incidence rate of all groups may direct us to shortage or inadequate interpretation in respect of the effect of fluoride. Probably, It would be better to divide caries risk groups for detailed interpretation.
Poster Session B 12.04.2012, 10:30 - 11:30

Dental Caries Experience of Children in the North West Province of South Africa

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Objectives: The purpose of this study was to determine the dental caries status and trends in dental caries experience of children in the largely rural North West Province (NWP) of South Africa (SA).

Method: The caries study was part of a larger study to determine the oral health status of children in the NWP. The study sample comprised 2900 children, randomly selected from children in the age groups 4-5-, 6-, 12- and 15 years in the Province. A two-staged cluster sampling technique was used to select the sample. The WHO methods, forms and periodontal probes were used for dental caries assessments and the collection of data. Prior to the survey, all examiners were trained and calibrated and only examiners who have achieved a reliability of 80% were allowed to take part in the survey. Consent for the examination of school children was obtained from the educational authorities, the parent or legal guardian as well as assent from the child concerned. The protocol was approved by the Research Committee of the School of Dentistry of the University of Pretoria.

Results: The results of the study showed prevalence figures of 48.1%, 58.4%, 20.2% and 36.5% for dental caries in the 4-5-, 6-, 12-, and 15 year old groups respectively. The obtained figure of 41.6% caries free children for 6 year-olds is considerably well below the goal of 70% set by the national Department of Health for SA for the year 2010. The severity of dental caries expressed as the DMFT/dmft and its components for 1999-2002 (previous survey) and 2008-2010 (current survey) is shown in Table 1.

Table 1: Severity of dental caries in the NWP for 1999-2002 and 2008-2010

<table>
<thead>
<tr>
<th>Age</th>
<th>1999-2002 (n = 4051)</th>
<th>2008-2010 (n = 2900)</th>
<th>DMFT/dmft</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>D/d</td>
<td>M/m</td>
<td>F/f</td>
</tr>
<tr>
<td>4-5yrs*</td>
<td>1019</td>
<td>1.40</td>
<td>0.12</td>
</tr>
<tr>
<td>6yrs*</td>
<td>1058</td>
<td>1.90</td>
<td>0.27</td>
</tr>
<tr>
<td>12yrs</td>
<td>1049</td>
<td>0.68</td>
<td>0.04</td>
</tr>
<tr>
<td>15yrs</td>
<td>925</td>
<td>1.16</td>
<td>0.11</td>
</tr>
</tbody>
</table>

*Primary Dentition

The DMFT of 0.79 and 0.47 obtained in the 1999-2002 and 2008-2010 surveys respectively, remain well below the goal of 1.5 set by the national Department of Health for SA for the year 2010 for 12-year-old children. The Unmet Treatment Need Index (UTN), expressed as a percentage was calculated by dividing the D(d) component by the DMFT(dmft). Based on the figures in Table 1 the UTN ranges from 87.2% for the 12-year-old group to 92.1% for the 4-5-year-old group, which mean that for all children in the NWP more than 85% of all caries go untreated. In the primary dentition (4-5- and 6 year) there was some evidence of use of dental services, mainly for extractions. The mean number of filled teeth was negligible for all the age groups. The DMFT more than doubled between the 12- and 15 year old cohorts.

When comparing the 1999-2002 survey with the 2008-2010 survey, the results show a significant increase (p<0.05) in caries severity in the primary dentition and a significant decrease (p<0.05) in caries severity in the permanent dentition. Analysis of the distribution of dental caries in the primary dentition between the two survey periods also shows a significant increase in the proportion of children with a mean dmft of 3 and more.

Conclusions: Caries levels in the primary dentition are high and have increased since 2003. More emphasis should be placed on the integration of oral health and general health and community primary preventive programmes, specifically targeting early childhood caries, should be introduced.
Dental fear development and associated social factors in young children

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Background: dental fear as a barrier to regular dental care can be formed in young age. The main sign of the dental fear development in children is negative behavior at a dental appointment, but there are no data about factors contributing to negative behavior of young children at the first preventive dental appointment.

Aim: to assess dental fear development and associated social factors in young children at their first visit to a dental office.

Materials: cross-sectional investigation was approved by Volgograd Regional Ethic Committee and informed consents were obtained from 242 mothers with children aged 1-2 years who visited a dental office for the first time. The mothers were questioned before the children’s dental appointment to collect data about some social factors contributing to dental fear development (the mothers’ age, education, occupation, dental fear, family, income, and the children’ health, socialization, preparation to dental examination, etc.). The Frankl Behavior Rating Scale (FBRS) was used to estimate the children’s behavior during the first preventive dental appointment which included dental examination and fluoride varnish application. The “negative” or “definitely negative” behavior of a child (according to FBRS) was considered to be a sign of dental fear development. Odd ratio (OR) and 95% confidence interval (CI) were used to measure the connection between dental fear development and social factors.

Results: dental fear development was revealed in 87 (35.9%) of 242 children and their behavior at the first preventive dental appointment was “negative” or “definitely negative”; 155 (64.1%) children did not have signs of dental fear development and their behavior was “positive” or “definitely positive” according to FBRS. The mothers’ questioning revealed some social factors contributing to the development of dental fear in young children. The significant mothers’ factors were: the age over 30 years (OR 1.66; CI 0.80-2.54); absence of job (being a housewife) (OR 1.83; CI 1.40-2.26); the mothers’ own dental fear (OR 1.52; CI 1.19-1.85). Significant family factors were: adversity (OR 1.58; CI 1.25-1.88); more than one child families (OR 3.21; CI 2.84-3.58); insufficient attention to a child (OR 1.43; CI 1.04-1.81); neglect of preparing and motivating children to a dental appointment (OR 2.04; CI 1.71-2.37). Low level of children’s socialization played a significant role in dental fear development: no kindergarten attendance (OR 2.60; CI 2.21-2.99); difficulties in communication with adults (OR 2.53; CI 2.16-2.53) and peers (OR 1.67; CI 0.83-2.51); negative attitude to a pediatrician (OR 2.56; CI 2.27-2.85). We did not reveal any significant connection between dental fear and the children’s general health, hospitalization, single parent family and family income, early children’s educating (classes in painting, dancing, etc.).

Conclusions: every third child aged 1-2 years demonstrated signs of dental fear development at the first preventive dental appointment; plenty of social factors contribute to the development of dental fear in young children and should be assessed before dental treatment.

Acknowledgements: the authors would like to acknowledge the mothers who participated in our research.

Sources of funding: Volgograd State Medical University.
Oral health and oral hygiene in 24-30-month-children in Volgograd in connection with participation in Dental Health Program

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Background: caries prevalence was high in young children in Russia over the past decades and children’s oral health needed improvement on the national level. The Russian National Health Program was developed in 2007 and included dental component (Dental Health Program, DHP) for children under one year of age. According to DHP children aged 9 and 12 months are provided with dental screening and their mothers receive counselling on oral hygiene, diet and fluorides for caries prevention in young children. DHP started in Volgograd in 2007, but the results of this program for young children’s oral health were not assessed.

Aim: to estimate oral health and oral hygiene in young children aged 24-30 months in connection with their participation in Dental Health Program.

Methods: to estimate the DHP results the investigation was organized in Volgograd Paediatric Clinic No 15. Two groups of children from 24 to 30 months of age were examined by a trained and calibrated dentist: the 1st group included 43 children (the average age was 25.9 months) who participated in DHP in the age of 9-12 months, and the 2nd group included 65 children (the average age was 26.5 months), who did not participate in DHP. Percentage of children with visible dental plaque and dmft>0 (with 95% confidence interval, CI) was calculated. Mothers were interviewed about oral hygiene for their children. The difference between the groups was estimated according to Student’s-t-test. The study was approved by Volgograd Regional Ethic Committee. Informed mothers’ consents were obtained.

Results: dental plaque was visible in 9 children (20.9%, CI 8.8%-33.0%) in the 1st group and in 44 children (67.7%, CI 66.3%-79.1%) in the 2nd group. The dmft>0 was revealed in 3 children (7.0%, CI -0.6%-14.6%) in the 1st group and in 16 children (24.6%, CI 14.1%-35.1%) in the 2nd one. Everyday tooth brushing was provided by the parents for 38 children (88.4%, CI 78.8%-98.0%) in the 1st group and for 50 children (76.9%, CI 64.7%-87.1%) in the 2nd group. The parents used fluoridated toothpastes for 30 children (69.8%, CI=56.1%-83.5%) in the 1st group and for 29 children (44.6%, CI 32.5%-56.7%) in the 2nd one. The difference between the groups was significant for the frequency of visible dental plaque revealing (t=5.5, p<0.001), fluoridated toothpaste use (t=2.7, p<0.01), caries prevalence in children (t=2.7, p<0.01), but not significant for everyday tooth brushing (t=1.6, p>0.05).

Conclusions: implementation of Dental Health Program in Volgograd was effective in decreasing caries prevalence and improving quality of oral hygiene in children of 24-30 months of age.

Acknowledgements: the authors would like to acknowledge the paediatricians of Volgograd Paediatric Clinic No15 for their help.

Sources of funding: Volgograd State Medical University.
Demirjian’s System for estimating dental age among Northwestern Turkish children aged 4-16 years

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Demirjian’s is the most commonly used method for dental age assessment. The aim of this study was to investigate the timing of individual tooth formation stages in a group of Northwestern Turkish children and to evaluate the suitability of Demirjian’s method. Dental ages (DAs) were assessed from 1678 digital panoramic radiographs of healthy children (aged 4-16 year-old, 743 female, 935 male). Seven mandibular teeth were evaluated according to Demirjian’s eight grade-dental maturity scale by one examiner. Dental age was compared to chronologic age (CA) using a paired t-test. Intra- and inter-observer agreements were assessed with 250 OPTGs.

It was shown that the mean difference between DA and CA was statistically significant among gender (p = 0.004) with (0.50±1.90) years in girls and (0.77±1.86) years in boys. The mean DA was significantly higher (p<0.0001) than the mean CA in the entire studied group therefore dental development was considerably accelerated. Intra and Interclass Correlation Coefficient (ICC) for the assessment of the dental age were 0.964 and 0.961 respectively (n=250) which is considered as “substantial agreement”.

The results show that the mean of DAs of the studied group of Turkish children are significantly higher from the CAs. Overestimation is notable in the group of 11-14 year-old boys and 12-13 year-old girls. As a result, specific standards of dental age assessment should be established for Turkish children and particularly for these age groups.
The effect of individual stress coping strategies on supportive periodontal therapy - A follow-up over a period of 10 years

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Background and Aims:
Inflammatory periodontal diseases initially caused by periodonto-pathogenic microorganisms are modulated by various host factors - like genetics, metabolic poor controlled diabetes mellitus or other general diseases influencing the immune system, smoking and emotional stress. The purpose of this study was to investigate if the success of supportive periodontal therapy is influenced by different stress coping strategies.

Material and Methods:
59 patients were recruited for a periodontal maintenance program over a period of 10 years. Mean clinical attachment loss (CAL) per patient as well as number and frequency of teeth with mean CAL of less than 4 mm, 4-6 mm and more than 6 mm were measured at baseline and during study progression after 2, 5 and 10 years. Measurement of coping strategies was performed using the Stress Coping Questionnaire. Significance concerning mean CAL at different registration times was tested using repeated measures ANOVA. Associations between clinical parameters and stress coping strategies were tested by Pearson’s correlation coefficient.

Results:
Periodontal treatment resulted in a significant decrease of mean CAL after 2 years. From that point up mean CAL remained constant.
Periodontal treatment resulted in an increase of frequency of teeth with CAL of less than 4 mm as well as in a reduction of the frequency of teeth with CAL of 4-6 mm and more than 6 mm after 2 years. The achieved treatment outcome remained constant during residual monitoring.
The data analyses showed a significant correlation (r = 0.319; p = 0.007) between defensive coping style and the number of teeth with CAL of more than 6 mm after 2 years. No further correlations were found between coping styles and CAL.

Discussion and Conclusion:
As periodontal treatment was less efficient after 2 years in patients showing more defensive coping styles, subsequent supportive periodontal therapy seems to have more beneficial effects on course of disease in that patient group over long time. Inequalities in disease progression due to inadequate coping strategies seem to be removed as a result of a consequent periodontal maintenance program.
Further studies investigating the effect of various coping strategies on long-term outcome of periodontal treatment in a more comprehensive study population are desirable.
The orthodontic treatment of palatal impacted canines with special regard to the treatment duration

Passrucker C., Santigli E.

**Background:** Approximately 2-3% of the maxillary canines do not erupt completely into the occlusal plane. Due to the fact that these teeth embody not only aesthetically but also functionally very important elements in the oral cavity, the orthodontic treatment, with or without surgical exposure, is a decisive measure to prevent the number of possible occlusal sequelae. After exact clinical diagnosis with determination of the localization, a wide range of opportunities arise to guide the tooth into the correct position.

**Objective:** The aim of this retrospective study about retained and impacted maxillary canines was to investigate the duration of treatment after orthodontic therapy and to determine various parameters, which have a crucial influence on the duration of therapy and prognosis. On the one hand, personal factors, such as age at baseline and sex, on the other hand, tooth-related factors, such as the type and extent of displacement as well as the axial tilt and the distance between the crown tip to the occlusal plane, were of interest.

**Material and Methods:** To examine the question, the records of 41 patients who were treated between January 1972 and January 2010 in the department of orthodontics at the Medical University of Graz have been retrospectively evaluated. This study group consisted of 17 male and 26 female patients with 57 maxillary impacted canines. Some of them were displaced unilaterally, some bilaterally.

**Results:** A highly significant correlation (p-value < 0,05) was found between the duration of treatment, the position, the tooth axis inclination and the distance of the crown tip to the occlusal plane of palatal displaced canines.

**Conclusion:** The future use of clinical unified datasheets, specifically for retained canines, would be an asset to ensure a better data processing, prognosis for the duration of treatment and cost planning.

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Social nicotine dependence and periodontal condition: a study of two groups of Romanian dental students

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Due to a high prevalence of smoking among Romanian students and the lack of any tobacco-control program in the dental education curriculum, the study aimed at determining the smoking status, social nicotine dependence, periodontal condition and oral hygiene among dental students. Ninety-nine first-year (36.4% smokers) and 124 sixth-year (33.9% smokers) Romanian dental students from the Faculty of Dental Medicine, Carol Davila University of Medicine and Pharmacy, Bucharest participated in this cross-sectional study, approved by the Ethical Committee in Research. The “Kano Test for Social Nicotine Dependence (KTSND)” self-administered questionnaire was used for assessing the social nicotine dependence [1]. Periodontal health status was assessed using the Community Periodontal Index and oral hygiene level was assessed using Silness & Löe plaque index. Data distributions were expressed as means, standard deviations, ranges and percentages, as appropriate. The scales measuring KTSND attitudes were collapsed into dichotomous variables: agreement (definitely yes and probably yes) and disagreement (definitely no and probably no). The associations between agreement/disagreement and smoking status, as well as between agreement/disagreement and periodontal status (healthy, score 0 and gingivitis, scores 1 and 2), were tested using Pearson Chi-squared Test. Fisher's Exact Test was used when the expected frequency of any cell in the table was less than 5. The two-sample test of proportion was used to test the null hypothesis that the proportions of periodontal disease in the two groups are equal. The oral hygiene of the study groups, expressed by mean plaque index, was compared using student t-test and one-way ANOVA test. The Mann-Whitney test was used for comparisons between the KTSND scores obtained in the two groups, based on the smoking status. All tests of significance were 2-tailed. Stata 11IC (StataCorp LP, Texas, USA, version 2009) was used for data analyses. A p-value < 0.05 was considered statistically significant. The results showed that the smoking rate in the two groups was high, most probably because of high social acceptability of smoking in Romania. The majority of smoking students were in the contemplator stage, suggesting the presence of awareness of smoking effects. The KTSND scores were statistically significant higher in smokers than in non-smokers in both groups. Although the sixth-year students were more aware of the physicians’ role in smoking cessation, they believed stronger in smoking being part of culture and denied more that smoking is a disease. Poor oral hygiene and gingivitis were statistically significant more prevalent in the first-year students than in the sixth-year students. There was a better periodontal condition of senior students; therefore the null hypothesis was rejected. A lack of preparation for acting toward quitting smoking was present in both groups; thus our findings suggest a need of tobacco control lectures in early dental study years. The present study may be a good starting point for 6 year follow-up of dental students after implementing a tobacco control program. Implementing oral health together with tobacco control programs might lower the prevalence of smoking and the social nicotine dependence among students and future dentists.
Cross-arch fixed partial dentures in patients with periodontally compromised maxillae

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Objective: A retrospective study was performed to test the hypothesis that a case can be made for one-piece large-span FDPs supported by periodontally compromised teeth in the maxilla. It was assumed that this scenario was a serious restorative option and a viable alternative to implant-supported modalities of gap closure.

Materials and Methods: A total of 20 patients (3 men and 17 women) were included. Their mean age was 53.7 (39–63) years at the time of collecting the baseline data. All patients had undergone periodontal, functional and endodontic treatment by an experienced clinician between 1997 and 2011. General health was good and the maxilla periodontally compromised in all cases. A total of 21 FDPs with spans of 10 or more units were inserted, one of them replacing a preexisting FDP. A number of clinical and radiological parameters were evaluated by an experienced investigator: probing depths, plaque index, furcation involvement, attachment levels, recessions, bone levels, bleeding on probing, mobility and vitality.

Results: The mean survival of all restorations was 48 (4–132) months at the time when they were last evaluated. Their mean span was 12.7 (11–14) units. The parameters obtained during the latest visit were compared to the baseline data collected at the outset of maintenance therapy. A total of 162 teeth had been present at baseline. All teeth served as abutments for the 21 FDPs, which included a total of 97 pontics and 7 cantilevers. No complications occurred in 13 of the 21 restorations. These cases involved no bleeding on probing, bone loss, tooth decay, furcation involvement or nonvitality. Complications in the remaining 8 cases included ceramic chipping (n = 5), nonvital teeth (n = 2), tooth extraction (n = 1) and tooth decay (n = 1).

Conclusions: These findings confirm that large-span FDPs constitute a serious restorative option in periodontally compromised residual dentitions.
Discrete choice experiment investigating preference’s for replacing an upper anterior missing tooth: A pilot study

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Background: Replacements for an upper anterior missing tooth include a dental implant supported crown, a fixed bridge and partial denture. How dentists and patients value the benefits of these options is controversial and inconclusive. Little qualitative information on costs and benefits of the treatments could be found. This study aims to elicit patients’ and dentists’ preferences of alternative dental prostheses using discrete choice experiment (DCE) and serves as a pilot study to develop and test a DCE instrument.

Methods: A DCE instrument was developed and piloted to assess preferences for dental treatments. Attributes and levels were generated from literature review and qualitative interviews. Three 2-level attributes (appearance, biting, fixation-comfort) and three 4-level attributes (longevity, procedure-risk and cost) were selected to describe treatment utilities. Ngene 1.1 was used to generate various fractional factorial designs, which examine the main effect only, and D-efficient design was selected. Orthogonally, level balance and minimal overlap were tested again in SPSS19. Four versions of questionnaires were created, each with 7 choices set per respondent, 3 options per set. The most and least preferred options were observed for each choice set to collect a full ranking in addition to the ‘Best’ option. Conditional logistic regression was conducted in STATA 12 to estimate utilities and significance. A pilot survey with 10 face-to-face interviews and 42 mail-based questionnaires were sent to a purposive sample of dentists and health care professionals in Edinburgh, Scotland. General information, including social economic, demographic and oral health characteristics of subjects was collected.

Result: 38 out of 52 valid questionnaires/interviews were returned with a response rate of 75%, 15 males and 23 females aged from 21-64 years. Most were highly educated with a full time job. Half (50%) reported loss of one or more permanent teeth and all had dental treatment experience. All coefficients of the utility function are statistically significant except the longevity and all behaving in line with priori expectations, showing evidence of theoretical validity. The most important attribute is appearance (Beta 1.52, 95% CI 1.06-1.95). The fixed nature of the treatment, biting properly and minimal preparation were preferred in various degrees.

Conclusions: DCEs can be a useful instrument for eliciting preference for dental treatment. The pilot study showed the survey was robust but needed careful wording for longevity. Given the preferred features of the treatment, the intervention that offers the most benefit will be revealed. The preference information can be used to predict Willingness-To-Pay and uptake of the service. Based on the pilot results, the modified questionnaire will be used in a larger sample of patients and dentists for assessing higher-level interactions and heterogeneity.
An analysis of the postgraduate orthodontic education in the European Union

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AIM: Clinical excellence in orthodontics starts with quality in postgraduate orthodontic education. At the present, postgraduate education in orthodontics varies throughout the European Union in quality and quantity. The purpose of this study was to identify existing disparities in European orthodontic postgraduate education.

MATERIALS AND METHOD: A questionnaire was sent to the orthodontic departments of the capital cities of 24 countries of the European Union. The questionnaire consisted of 7 questions, concerning the duration of the postgraduate orthodontic training, costs, acceptance criteria, if international students are allowed to apply, teaching language, academic degree and the existence of a web page to look up further information. Because the responding rate was too little, the questionnaire was also sent to other big cities within the European Union, and some answers were also gained at the EOS-Congress in Portorož/Slovenia in June 2010. Descriptive statistics were applied to the data.

RESULTS: Information about the program was gained from 22 countries of the European Union. The duration of the postgraduate orthodontic training ranged between 3 and 4 years. The fees ranged from 0 to 55.000 € per year. 16 countries offer a degree at the end of their program, Master of science reportedly by 29.2 per cent as the most common one among them. The most common criteria for acceptance are working experience and the knowledge of the English language reportedly by 33.3 per cent. International students are allowed to apply, except for 3 countries.

CONCLUSION: The data revealed substantial disparities in postgraduate orthodontic training within the European Union. The study serves as a starting point for further investigations and to help future postgraduates to pick the right program for them. The ultimate aim is to promote standardization and overall quality improvement of postgraduate orthodontic education in the European Union.
Comparison of Orthodontic Treatment Need in the Seven Different Regions of Turkey

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Introduction: This study is a part of an oral health survey analysis project being conducted on total 3040 individuals from 2009 to 2010 in Turkey. The data was analysed in anew evaluation approach in respect of oral health research methodology.

Aim: The aim of this study was to assess and compare the need for orthodontic treatment need in and between the seven different regions (Mediterranean, Aegean, Black Sea, East Anatolia, South-Eastern Anatolia, Central Anatolia and Marmara) of Turkey.

Material-Methods: Main sample group of the survey was determined with stratified proportional random sampling strategy from different cities and their rural areas in Turkey (sample power 95%). 1089 individuals (543 female, 546 male) with the mean age of 13.46 +/- 5 were examined under blue-white colour light by using plane mouth mirror and extraoral evaluation. Orthodontic indicators were diagnosed and distinguished by visual criteria. The Index of Orthodontic Treatment Need (IOTN), which has two parts: the Aesthetic (AC) and Dental Health (DHC) components, was used to identify the treatment need in the seven different regions.

Results: According to the DHC of IOTN, 33.2% of the total Turkish population showed no or slight need, 15.2% moderate need and 51.6% great need for orthodontic treatment. The highest DHC percentage was pointed in the South-Eastern Anatolia Region. The AC of IOTN resulted in 88.2% no need, 8.2% moderate need and 3.7% great need for treatment. The Aegean Region has the greatest need (12.2%) for treatment according the AC.

Conclusions: More than half of the total study group from different regions has great need for orthodontic treatment. Determination of the distribution of the treatment needs in the different regions of Turkey may be useful in improvement of the national health policy.
Comparison of the Orthodontic Information of the Original and Modified Oral Health Assessment Form


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Introduction: This study is a part of an oral health survey analysis project being conducted on total 3040 individuals from 2009 to 2010 in Turkey. The purpose of EGOHID (European Global Oral Health Indicators Development) was to provide indicators for measurement of oral health and use of oral health care among populations. Nations can improve their health service capacities at regional or local levels using the results of the health indicator measurements. A working group with members from different countries agreed of a list of 40 original indicators to include 25 indicators in the questionnaire form. One of the indicators was about orthodontic treatment coverage assessment, which was asked as one question. In this way, the orthodontic treatment coverage can be established, but not the need of orthodontic treatment in a nation or in different regions of a population. Therefore, to extend the information acquired from the surveillance study we added an orthodontist to the team and additional assessments.

Aim: The aim of this study was to compare the information obtained from the original EGOHID form and the modified orthodontic questionnaire from the Turkish team.

Material&Method: 1089 individuals (543 female, 546 male) with the mean age of 13.46 +/- 5 were included in the study. Additionally to the orthodontic coverage assessment also Index of Orthodontic Treatment Need (IOTN) was evaluated.

Results: Only 3.5 % (38 participants) of the total study group claimed to wear an orthodontic appliance of any kind (e.g. fixed or removable, active or retaining). According to the Dental Health Component(DHC) of IOTN, 33,2% of the total Turkish population showed no or slight need, 15,2% moderate need and 51,6% great need for orthodontic treatment.

Conclusion: Evaluation of the original orthodontic coverage assessment do not demonstrate the need for orthodontic treatment in a population. The status of participants who are not wearing orthodontic appliances is not clear: Do they not need orthodontic treatment or do they need but not obtain the chance for treatment? Therefore it can be recommended to use the IOTN index in addition to the original assessment survey form in surveillance studies.
Oral Habits and Tooth Wear Lesions among Adult Males in Igbo-Ora, Southwestern, Nigeria

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Association between oral habits and tooth wear lesions among adult male population in a rural community of Igbo-Ora, Southwestern Nigeria was investigated in this cross-sectional study. Participants were 200 consenting males aged 20 years and above (35.6 ±11.7 years) living in Igbo-Ora community for 5 consecutive years preceding the study. A 15-item semi-structured questionnaire was used to obtain information from the participants. Oral examination to establish the presence of tooth wear lesions was carried out by two examiners who had prior one day training on the diagnostic criteria for attrition, abrasion and erosion. Obtained data were analysed using SPSS package version 15. Frequencies and percentages of relevant variables were generated. Chi-square test was used to test associations between categorical variables at 5% level of significance.

Results showed that 86.5% of study subjects had one form of tooth wear lesion. There was a significant association between tooth wear lesions and materials used in cleaning the teeth, tooth brushing techniques, teeth grinding and alcohol consumption (p<0.05). Only presence of attrition was significantly associated with presence of discomfort (p<0.05); and those with attrition had visited dental clinic before.

The study outcome has shown the important relationship between some oral habits and tooth wear lesion in this group of people. This has implication in public health campaign aimed at reducing the incidence of and progression of tooth wear lesion among the people in the rural community. Sampling technique and size as well as male gender only sampled constitutes important limitations to this study.

Key words: Oral habits, Rural Community, Tooth Wear, Nigerian
Shear bond strength of brackets with different enamel etching

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Introduction
The direct bonding of brackets with composite adhesives and the acidic bonding technique brought many advantages to dentofacial orthopedics (simple handling, good adhesion, reduced gingival irritations, improved aesthetics, and reduction of caries).

To reduce the bonding time especially when curing with light-activated adhesives (drying, polymerisation time) several improvements have been taken place. Lamps with short curing times and higher light intensities adhesives without the need for drying are available nowadays. Recently “all-in-one adhesives” (etching, priming and bonding at one step) have also been offered. The purpose of this study was to compare the microretentive bond strength of a light-activated adhesive using a self-etching primer versus conventional acidic bonding technique with 37% phosphoric acid and universal primer.

Materials and Methods
20 molars were bonded with each bonding technique and the bond strength of the bonded brackets were determined by shear testing with an Instron measuring machine (feed rate 0.5mm/min). Residual adhesive on the enamel surface was determined using the modified adhesive remnant index =ARI (Zeiss stereo microscope). The statistical depiction was performed by means of descriptive and explorative data analysis. The analysis was carried out with the SPSS program. The level of significance was set at p< 0.05. The graphic illustrations were drawn up using Boxplot. To compare two mean values the T-Test of independent random samples was employed.

Results
In this study bond strengths of both groups achieved the minimum bond strength of 5-8 MPa established by Reynolds. A T-Test of independent random samples showed no significant difference between the two groups. ARI: bond failure occurred in most of the cases at the bracket-composite resin adhesive interface. Only in 3 cases < 90 % and in 2 cases <10 % adhesive remained on the tooth surface when using Transbond.

Conclusion
The depth of the etched enamel surface created by phosphoric acid may be a contributing factor to the incidence of enamel fracture. The new acid-etch primer do not penetrate or dissolve the enamel surface to the same depth as conventional systems. Transbond Plus Self Etching Primer showed sufficient bond strength and is adequate for clinical use by saving chair time.
Comparison of angle- and distance measurements on geometric bodies using laser scan- and electronic methods

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Introduction and aim: Discrepancies between planned and definitely attained dentoskeletal changes during orthodontic treatment are of continuous concern. A classical and common procedure to find out such therapeutic induced modifications is the manual use of electronic calipers and protractors in order to measure dental casts. The development of optical measurements systems, based on the principles of triangulation as applied in 3D-laser scanners entails further progress. These devices enable to record dentoalveolar movements simultaneously in all directions. As both techniques are applicable today, it was the aim of the study to compare their precision.

Material and Methods: For this purpose five polygons with well known dimensions were measured respectively, by one investigator. Thereby a minimum interval of one week was kept between the repetitions. Initially the length of 23 edges and the angles between 34 adjacent areas of the geometric objects were determined by electronic calipers (Digi-med, Fa. Preisser Messtechnik, Gammertingen, BRD) and protractors (Universalwinkelmesser R. 150 mm, Fa. Preisser Messtechnik, Gammertingen, BRD) respectively.

Following the coating of 3 plastic polygons with highly detailed contrast spray (Dentacosanspray plus, Dentoco Dentalindustrie u. – marketing GmbH, Bad Homburg, BRD), each measured area was marked threefold punctually by the tip of a fine needle (Carpule 30 G 0,3 X 25 Dental injection needle, Heraeus Kulzer GmbH). Furthermore the areas of 2 plaster polygons were marked by asymmetric placed grooves using a cutting disk (width 0,5 mm). The lasercanning of all prepared geometric objects and their assembling to complete three-dimensional images represent the next step. In succession, the endpoints of the edges and the punctual resp. groove marks of the areas were steered for by a cross hair and the corresponding coordinates used for computation of the distances and angles.

Statistics: Three series of manual and lasercan measurements were tested for reproducibility using the Intraclass Correlation Coefficient (ICC). The degree of conformity between the different distance- and angle techniques respectively was described and judged according to the ICC and the Coefficient of Accordance by Lin. Descriptive statistics revealed the mean differences, the minimum, the maximum and the standard deviation between the corresponding scan- and manual results. In addition the average difference between the 3 scan resp. manual single measurements to their own average was elicited. Furthermore the intramethodical correspondence between 3 respective measurements sequences at the groups: angle scan, angel manual, distance scan and distance manual was determined. Comparing the intermethodical means of scan- and manual measurements by pairs, the Coefficient of Concordance was calculated and presented using scatterplot graphics.

Results and Conclusion: The results show the degree of convergence of both measurement methods and their potential exchangeability and will be presented by April 2012.
Post Conference Course
April 13 - 14

How to publish

Prof. Dr. Dominique Declerck, Dr. Roos Leroy
Department of Oral Health Sciences, K.U. Leuven, Leuven, Belgium

During the one-day program (Friday afternoon and Saturday morning) a mix of presentations, small group workshops and plenary feedback will help junior researchers finding their way in the first steps to write a scientific paper and how to appraise the scientific literature. Participants will be sent some documents in advance, which they should read before the workshop.

Program

Fri Apr 13

14:00-15:30: How to start writing your first research paper – part I (presentation)
15:30-15:45: Break
15:45-17:00: Participants divide into small groups to peer review a paper

Sat Apr 14

09:00-09.45 Plenary discussion of the paper with feedback from the groups
09:45-10:45 How to start writing your first research paper – part II (presentation)
10:45-11:00 Break
11:00-12:00 Participants divide into small groups to write an abstract for the discussed paper
12:00-13:00 Plenary with feedback from groups
  Feedback of the day
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